Mapping the Distribution of *Plumeria pudica* Jacq. as an Ornamental Tree in Siquijor Landscapes

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Abstract

Siquijor is a small isolated island accessible by an hour of boat ride from the nearest port of Dumaguete. Despite the isolation, a great part of its coastal areas is becoming highly urbanized with residential houses and tourist attractions. Along with it, introduced landscape plants are becoming noticeable in backyard gardens, especially along the island's circumferential coastal road.

Plumeria pudica *Jacq. was introduced to the Philippines in the 1980s but it was only in the 2000s that it became popular as a garden tree. In recent years, this* Plumeria *grew more noticeable in gardens and public landscapes in several provinces. From 2015 to 2019, the* P. pudica *became common in residential and resort landscapes flanking the major roads in Siquijor.*

The research attempted to trace the origins and the distribution profile of the plant on the island by determining P. pudica's *occurrence along the circumferential road. It was observed that the towns of Larena and Siquijor had the most visible occurrences of the plant.*

The study also determined the distribution method by tracing and mapping the distribution lines of the specimens. By ocular visits and personal interviews with household owners and garden sellers, the history of each Plumeria *specimen and its source were traced. The nature of distribution was also recorded to show how this non-native landscape species got to be distributed on a remote island like Siquijor. Results revealed that the plant was introduced to the island because of commercial reasons but was often distributed socially as a gift.*

Keywords: Siquijor, exotic species, landscape tree, Plumeria, exotic plant dispersal

I. Introduction

A. Background

Siquijor Island is an island province with many wonders and rich culture, but more popularly known because of its healers and natural medicine practitioners. The book *Siquijor's Mystical Wonders* by Banguis-Bantawig et al. (2016) lists down several practices of healing making use of plants collected around the vicinity of Siquijor's mystic mountain Bandilaan. Though the parts of the island where the healers abound remain pristine, an ocular of it would reveal that the island is getting its share of urban development and influx of resort facilities, as the province realigns its thrust towards tourism.

Visitors to the island would find that the coastal areas nearer to the townships are becoming noticeably built up with contemporary-looking houses. These houses also use predominantly popular exotic trees and ornamentals in their gardens. Even commercial landscapes and resorts are visibly using introduced landscaping plants.

Plumeria trees in general are popular plants in the Philippines and in other tropical countries. Kalachuchi as they are commonly referred to in Philippine landscapes are popular especially in urban streetscapes along coastal areas. Popular species are renowned for having good tree architecture, robust thick glossy leaves, and very attractive flower clusters.

Kalachuchi is a member of the family *Apocynaceae* (which includes other popular flowering plants such as the *adelfa, kampanilla*, yellow bell and much more). Dr. Domingo Madulid's A Pictorial Cyclopedia of Philippine Ornamental Plants (2000) lists several species like *Plumeria obtusifolia* L. and *Plumeria rubra* L., along with its varieties and hybrids in its roster. These species have long been used locally in

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Figure 1
In the home gardens around Siquijor Island, an exotic tree species has established an undeniable presence. This new salient species is *Plumeria pudica* Jacq., a kalachuchi variety called fujipani by the locals. In a span of five years, it has become a common sight in residential and commercial developments along the circumferential highway. Seen in this image is a residential garden in a town in Siquijor showing the extensive use of the plant.

garden and landscape design. It could be considered a favorite among garden enthusiasts and designers. New *Plumeria* varieties have become design favorites, with the continuing emergence of new cultivars and exciting flower colors. *Plumeria pudica* Jacq. is a relatively new species used in landscaping which was first introduced in the 1980s. Interviewed horticulturists recounted that it was in the 2000s that *P. pudica* became popular as a landscape ornamental via shipped propagations from Bangkok. Plant importers brought in specimens from Thai nurseries and since then *P. pudica* has been a fixture as an ornamental plant in the local landscape scene, earning the nickname spoon-leafed kalachuchi.

The research proponent has personally witnessed the reintroduction of the spoon-leafed kalachuchi in the local plant market scene in 2005. He observed the plant's status in the municipality of Panglao in Bohol province. In 2006, the species was practically non-existent on the island. Then on a visit to the island in 2008, one house near the Tagbilaran-Panglao bridge had grown four to five tree specimens in its backyard. The next year the houses near the original house also planted specimens. Around 2010, numerous houses in Dauis town planted *P. pudica* in their gardens. By 2013, the presence of the spoon-leafed kalachuchi had already extended to the nearby Panglao town. In some communities, particularly flanking the major roads, it has become ubiquitous.

In 2015 the research proponent visited Siquijor and went around the island. But there was hardly any noticeable presence of *P. pudica* planted around gardens. When he returned to the island four years later in 2019, he found that the presence of *P. pudica's* white flower clusters is disturbingly very noticeable. It was practically everywhere, especially in landscapes flanking the island's circumferential highway. The sudden explosion of its presence on Siquijor prompted the proponent to make this research on the spoon-leafed kalachuchi in the Siquijor landscapes.

Figure 2. The perceived green landscapes of Siquijor Island where the healers collect their plant specimens are relegated to the higher elevations

According to Margaret Barwick (2004) in her Tropical and Subtropical Trees – A Worldwide Encyclopaedic Guide, *P. pudica* is a plant that is native to Central and South America, in Venezuela, Colombia, and Panama. It is characterized by narrow spathulate leaves and large panicles of white flowers. It is an introduced species in the Philippines and has become popular in the last two decades. Relatively it has become common in some provinces like Bohol, observed mostly growing as a backyard plant in house gardens and commercial landscapes.

Local gardeners claim that the spoon-leafed kalachuchi is a species that is fast growing. It requires to be planted in a spot which receives bright full sunlight exposure and could tolerate moderate dry periods making them easy to grow and maintain. Its aesthetics relies on its straight upright branching growth, its spoon-shaped robust whorled leaves

and the prolific clusters of white five petaled flowers (which is the identifying trait of most kalachuchi plants). On Siquijor Island it is called *fujipani*, which confuses many that it came from Japan, as the name sounds Japanese (but the research proponent suspects it is a monicker derived from mispronouncing 'frangipani' which is the international name of the common kalachuchi varieties).

Figure 3. *Plumeria pudica* Jacq. is a common plant in Siquijor around 2019. Several specimens were used in the landscape design of the Provincial Hall complex.

Figure 4. One of the reasons mentioned by garden owners why they decided to grow the *Plumeria pudica* in their gardens is because it flowers profusely with showy white bloom clusters.

B. Statement of the Problem

On an initial ocular of Siquijor, *P. pudica* was observed to be present in household gardens and resort landscapes flanking the main coastal highway. But it is interesting to note that in the span of four years, the plant's presence on the island has become undeniably common.

How would an ornamental plant such as *P. pudica* get to be dispersed and distributed in a small community model? Since Siquijor is a one-hour ferry ride away from Dumaguete and does not have access to its own commercial airport yet in the time of research, its remote nature would be a good model to study the distribution behavior of the plant among garden users on the island.

Additionally, in the short period of time it has become common, it would be ideal to map out the distribution of the plant on the island and attach a time frame to its dispersal in the locality of Siquijor.

C. Significance of the Study

Invasive species have become an ecological concern in many locations. In the Philippines we have witnessed the population explosion of several introduced species which we are still studying the effects of, not only in botany but also in ecology in general. In the past, ornamental species like *Lantana camara* L. and even other *Plumeria spp.* were some of them. These were documented by Alvina and Madulid as introduced in the galleon trade by the Spaniards in their book published in 2009. The species mentioned are now common in countryside landscapes, *Lantana* observed being present in brush areas along highways all over the country. The latter has specimens observed growing in hard-to-reach cliffs in islands like Mindoro and Palawan (personally witnessed by research proponent).

The fujipani's short dispersal history would be good basis to show how an ornamental could potentially become naturalized, now that it is on the way to becoming a common sight in several local islands. Since the plant is observed to be confined within households and is not yet encroaching into natural landscapes, it gives a good model on how humans as users aid in dispersing a plant in a specific locality.

D. Goals and Objectives

The research's main goal is mapping out the physical distribution and dispersal timeframe of *P. pudica* on Siquijor Island to show its occurrence in local gardens as an ornamental plant.

The study optimistically adapted these objectives:

1. Learn how the plant is currently distributed to show occurrence of the *P. pudica* on the island and determine what municipalities would have a greater concentration of it.
2. Observe individual gardens and learn how the plant got distributed among the users in Siquijor and learn the users' demographics, the tree's dispersal methods and reasons why the plant was distributed.
3. Learn where and how the *P. pudica* entered and got introduced to Siquijor Island. This was achieved by tracing and backtracking the source of plant specimens in several observed gardens.

E. Scope and Limitations

Though the species' status on Panglao Island is mentioned in the introduction, the research study will not dwell on facts and data observed on that island.

With regards to tracing the origins of the specimens in Siquijor, it would concentrate on the physical entry of the species into the province. The source of it outside of the island will not be included in the study.

Because of the limited time to survey the island and collect data, the possibility of having multiple sources of the specimens will not be explored further. It will only deal with the dispersal loop derived from ocular observations while traversing the circumferential highway. The data collection on Siquijor Island was limited to three days, so methods and ways of collection worked on this timeframe constraint.

The research did not explore the wild distribution of *P. pudica* if there are any. While doing the ocular, the research did not document plants growing in wild patches as there were none observed and the research proponent did not enter forested areas. Research only concentrated on specimens growing in gardens and designed landscapes.

II. The Research

The book Flora Filipina from Acapulco to Manila (Alvina & Madulid, 2009) lists close to 50 plant species that were brought to the Philippines via the galleon trade and one of it is *Plumeria rubra* L., which is commonly used as an ornamental in the Philippines. Though *P. rubra* has become naturalized on some islands in the Philippines, the presence of *P. pudica* is much more noticeable in Siquijor compared to the long-established *P. rubra* or even the *P. obtusifolia* L.

In a personal interview with Ray Ong, a horticulturist and Philippine Gardens editor of the Philippine Star, he stated that *P. pudica* was introduced to Philippine horticulture in the early 1980s by Ely Bardenas. Mr. Bardenas was a reputed landscaper and plant grower in the 1970s and 1980s. He remains a highly popular ornamental plant collector among horticulture circles even decades after his passing. Several plants are acknowledged and attributed to be made popular by him as recounted by members of the Philippine Horticultural Society.

Since then, *P. pudica* has been circulating among private collectors around Metro Manila. But in the early 2000s, the plant experienced a garden renaissance when it was reintroduced through imported propagations grown by Thai nurseries. It quickly became popular among local gardeners because of its beauty and growth ease.

Lazaro-Lobo and Ervin (2019) in their recent study entitled *A global examination on the differential impacts of roadsides on native versus exotic and weedy plant species* discussed the crucial and delicate role of infrastructure roads as a dispersal for weeds and other invasive plants. This *P. pudica* research was planned to take off from this premise and will focus on the probable dispersal of the *Plumeria* specimens along the circumferential highway on Siquijor Island. An added factor is that the main highway exposure and visibility made the fujipani more visible to garden owners making them more attractive to them.

It was also checked if there are existing surveys of Siquijor Island flora. Researcher came across several articles outlining simple lists of plants that could be seen in Siquijor, particularly Mt. Bandilaan. An article by San Diego (2005) on the Philippine Star website discussed a few plants that were used by the healers in their rituals but did not mention any plants used in household gardens.

A personal interview with healer Diosdada Ponce who resides in Mt. Bandilaan gave us a glimpse of some plants that they grow traditionally in household gardens. She showed us a list of plants, but it was all written in the Visayan vernacular language. A picture of the *P. pudica* was shown to her, which she did not recognize. It was only when she was told that it was a variety of kalachuchi that she remembered that the plant has a particular healing use.

Previously conducted flora research were explored for their methods to survey but given the limited time on Siquijor to do the data collection, a simple method framework was devised. The steps and the data generally dealt with qualitative items, but numerical data were gathered to build up and support the graphic part of the study. Mapping was generally used as a descriptive and qualitative tool to give the idea of the distribution and dispersal behavior of the *P. pudica.*

A. General Terms Used

Kalachuchi- a vernacular term used to refer to *Plumeria* plants used in ornamental and landscape plants in the Philippines.

Frangipani –The more accepted common name used to refer to *Plumeria* plants

Fuijipani - is the local vernacular name given to *Plumeria pudica* on Siquijor Island. Further scrutiny revealed fujipani is derived from frangipani, probably got twisted in pronunciation because of the nature of Visayan language.

Native plant – plant species that is indigenous or endemic to Siquijor

Exotic species – a species not native to Siquijor

B. Methodology

The research was done following these steps:

1. Initial mapping of *Plumeria pudica* on Siquijor Island on the circumferential highway
2. Determining the probable plant dispersal epicenters and ocular of the individual dispersal candidates
3. Interview of garden owners which were deemed as *Plumeria pudica* dispersal agent candidates
4. Mapping the Fujipani's Occurrence Results
5. Assessment of results
6. Conclusion

Following Lazaro-Lobo and Ervin's study, this research was started under the premise that the *P. pudica* concentration on Siquijor Island will be observed along one of the perceived major dispersal methods of the plant, through the circumferential highway. Observations and documentation for the research were done taking note of the proximity of plant subjects to this main artery. Though not all specimens studied are located on the main road, good access to it was a basis for their consideration.

C. Research Proper

1. Initial ocular of *Plumeria pudica* on Siquijor Island on the circumferential highway

Using Google Maps on a handheld mobile phone, the circumferential road was studied. It shows that this main thoroughfare passes through all the coastal areas of the six municipalities of Siquijor.

The quick ocular inspection was conducted in limited hours as the vehicle was only available for a short duration of three hours. Due to time constraint and the limited tools available to the research only the visibility frequency of the plant was observed and recorded. Individual locations of specimens were not noted and recorded.

Figure 5. Siquijor map showing all the six municipality boundaries and the main circumferential road – mapped out in orange color. It shows that the circumferential road passes through all six towns of the island province. The map image was generated with the help of the students of the Archi 211 and DBE 397 classes of the UP Diliman College of Architecture taken in the first semester of academic year 2019-2020. The map was based on a Google Maps image.

Figure 6. *Plumeria pudica* along the road in Talingting town

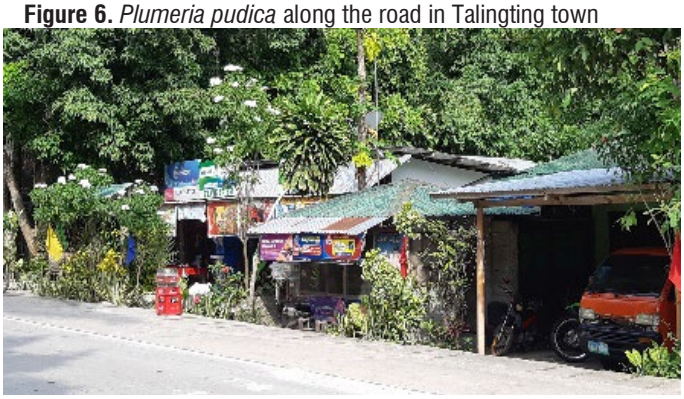


Figure 7. The *Plumeria pudica* specimens, as seen on the road, were observed and recorded.

The researcher furnished a vehicle and a driver to go around the circumferential highway and observe the occurrence of the *P. pudica* along the road. This was performed by taking note of the time difference in between plant specimen ocular occurrences while following the highway. It was done while the vehicle was running at 60 to 70 kilometers per hour. The ocular was carried out in a period of one afternoon. The results of this initial ocular were tabulated as shown in Table 1.

Table 1

Timing intervals of plant occurrence on main highways in Siquijor

Town/ Locality	Average time interval of tree sighting	Perceived presence	Garden types where the plant was observed
Siquijor	Every 60 seconds or less	Very noticeable	Residential gardens
San Juan	Every 2 minutes or less	Very noticeable	Residential gardens and resorts developments
Lazi	Every 4 to 5 minutes	Present	Residential gardens
Maria	Every 5 to 10 minutes	Present	Residential gardens
Talingting	Every 3 to 4 minutes	Fairly noticeable	Residential gardens
Larena	Every 60 seconds or less	Very noticeable	Residential gardens

It was observed that the highest concentrations of the plant's occurrence were recorded in the towns of Larena, Siquijor, and San Juan. In Larena and Siquijor, the occurrence of *P. pudica* was observed to be predominantly in household gardens, where they are planted fronting the highway, receiving maximum sunlight exposure.

In the municipality of San Juan, the *P. pudica* was observed being used in a mix of commercial establishments, resorts, and residential houses.

2. Determining the probable plant dispersal epicenters and ocular of the individual dispersal agent candidates

Since it was observed that the towns of Siquijor, Larena, and San Juan were the ones having the highest occurrence concentration of *P. pudica*, the three towns were suspected candidates as the source of the plant. An ocular of the gardens having unique or highly noticeable presence of the fujipani was performed.

It was qualified that the following parameters would lead the researcher to the probable source of the plant in each of the municipalities:

- Local growers and sellers
- Individual households or establishments with notable presence such as well growing specimens or plentiful quantity of the plant
- Individual households or establishments with notable use of fujipani in their garden aesthetics
- Community areas with high concentration of occurrence of the plant

A local vehicle operated by a Siquijor native - who served as guide and translator for easier navigation - was employed by the researcher to go around the three towns, searching for the dispersal agent candidates based on the said qualifications.

In the garden visits, the gardens were photo-documented, and the garden owners were interviewed.

The study was conducted outside institutional oversight but permission to conduct interview was explicitly asked verbally before the interview was started. The nature and the use of the research for academic purposes in the University of the Philippines and for possible publication were also explained thoroughly. Interviewees verbally agreed to also use their names. Permission to also take photographs of the owners, gardens, and landscapes was also obtained. Though the interviewees were also gracious in allowing themselves to be photographed and some even along with their respective gardens, the research proponent chose not to include personal photographs of the owners. The personal pictures were omitted in the tabulation for privacy. Participant names were also shortened to protect their privacy.

Physical tracing and backtracking were highly carried out, asking the garden owners where they acquired their original specimen. If it was possible, these sources were also visited, documented, and eventually interviewed. This was painstakingly done to optimistically find the probable source of the fujipani's lineage and hopefully the origins.

The dispersal agent candidates documented were shown in the following Table 2:

Table 2
Observed and Documented Dispersal Candidate Gardens

Locality	Owner	Garden	Reason chosen to be documented	Type of establishment
San Juan	Mrs. Bucol		The Plumeria was planted in a prominent area of the garden near the road	Residential
Siquijor	Mrs. Cenas		Plumeria was plenty and noticeable from road arranged rhythmically along main pathway	Residential
Siquijor	Mrs. Delos Reyes		Specimens were healthy and highly visible from the road	Residential

Siquijor	Owner out of the country but permission was granted by a relative who serves as caretaker		Specimens were plenty and highly visible from road	Residential
Larena	Ms. Banguis		Garden seller referred by my assigned driver	Commercial
Larena	Mrs. Kilat		Trees in this garden are visible from the road	Residential
Larena	Owner out of the country		Presence of the plants are quite noticeable because of the large garden expanse	Residential
Larena	Mrs. Cayongcong		Specimens are highly visible from the highway and are really spec	Residential
Larena	Ms. Bantilan	Ms. Bantilan acknowledged that she was the original commercial source of the ornamental plant.	Grower referred by garden owner Amancia Cayongcong	Commercial

3. Interview of fujipani local dispersal agent candidates

P. pudica was also observed in several resorts in the town of San Juan but due to the time constraints of the research data collection period, there was lack of time to talk to specific resort owners. The only owners interviewed were the sector representatives who participated in a scheduled focus group discussion (FGD) organized by the Provincial Government. The FGD was conducted not for this specific research but for another activity. The presence of the participants in the venue was taken advantage by the research proponent as some of their responses were noted. Out of three resort/lodging owners interviewed, only one was familiar with the *P. pudica*. Her response was included in the data.

Other participants of the FGD were also asked about their familiarity with fujipani. This was performed by showing pictures of the plant and asking if it is present in their respective house gardens. Two respondents were familiar with the fujipani. Their responses were also included in the tabulation.

The possible *P. pudica* dispersal candidates, the garden owners and growers, were each interviewed and asked for the following data:

- Specimen source for the specific garden
- Year it was acquired
- Number of years the garden has grown the *Plumeria pudica* (fujipani)
- Means of acquisition: Reason why fujipani was acquired for the garden
- Means of further dispersal: Was fujipani dispersed to other people?

The means of acquisition and further dispersal were also qualified as:

- Commercial – purchased from a source through commerce involving cash
- Social – not commercial or did not involve any cash

The individual means, whether commercial or social, were also recorded to further qualify the means of further dispersal.

The Provincial Capitol FGD respondents mentioned previously were also asked the same questions that were presented to the probable dispersal candidates in the ocular. FGD respondents who confirmed identity of *P. pudica* were treated as dispersal agent candidates.

The answers and the corresponding data were tabulated in Table 3.

Table 3
Tabulated Interview Answers of Dispersal Agent Candidates

Name	Garden Locality	Year acquired	Number of years growing fujipani	Means of acquisition: Reason why fujipani was acquired for the garden	Means of further dispersal: Was fujipani dispersed to other people?
Mrs. delos Reyes	Siquijor	2014	4 to 5 years	Social- Maid acquired it	Not given away
Mrs. Cenas	Siquijor	2017	3 years	Social- Given by neighbor	Social – Given to friends locally and to sister in Cotabato
Mrs. Cayongcong	Larena	2016	4 years	Commercial- Bought for 50 pesos from Amy Bantilan	Social – Propagated and given away to friends
Mrs. Bonachita	Lazi	2015	5 years	Social- From friends	Just one specimen
Mrs. Bucol	San Juan	2009	10 years	Social- Acquired from a friend	Social – Propagated and given to friends
Ms. Bantilan	Larena	2006 or 2007	10 years but stopped after 2016	Commercial- Bought for 100 pesos form Dumaguete – from growers in Valencia	Commercial – Propagated for a year and sold to resort landscapers using them in San Juan. Sold also to neighbors in Larena and residents of Siquijor town
Mr. Maghanoy	San Juan	2016	3 years	Social – Acquired from neighbor	Not Propagated
Ms. Banguis	Larena	2016	3 years	Social – Acquired from a person in Maria town	Commercial – Propagated to sell to landscapers and enthusiasts
Mrs. Kilat	Larena	2016	3 years	Social- Given by banana vendor to her	Not propagated

The people interviewed were also asked additional questions about why they acquired *Plumeria pudica* specimens to plant in their respective gardens. Interviewees gave varying answers.

'The plant is beautiful' is the most common response which is also based on the aesthetic properties of the fujipani. They commonly attribute this to the prolific white flower clusters that most owners say do not follow a blooming season (though this fact will have to be confirmed in future research). Some respondents also said the lush straight growth is also attractive. The aesthetic component of this could be considered as personal choice but their preferences could be culturally attributed, which can also be classified as socially affected. The ease of cultivation and propagation reason for acquiring on the other hand is based on personal preference.

'Fujipani is nice as seen growing in another person's garden' is another reason given by participants. This answer varies as some respondents have acquired specimens from varying sources (could be a neighbor or another type of social relationship) and found them beautifully growing in that person's house. One claimed she saw it growing in a beach resort therefore thought it would also be nice to grow in her own garden. This answer is also social in nature, affected by how they see others growing the plant in their own respective gardens. Their personal choices were influenced by the neighbor, etc.

Another response was that the homeowner was persuaded she needed to plant fujipani in her garden. She has not seen the *P. pudica* in person, but it prompted her to locate and grow one which is also evident as a form of social influence. The responses are shown in Table 4.

Table 4
Tabulated Reasons for Acquiring the Fujipani

Reason for acquiring	Number of. Respondents who gave the answer	Nature of Reason
The plant is beautiful	9	Personal/ could be socially influenced
The plant is easy to cultivate/propagate	6	Personal
The plant is nice as seen growing in another person's garden 3	3	Social
Was told to grow one	1	Social

4. Mapping the *Fujipani's* Occurrence Results

To graphically illustrate how the different gardens visited were distributed on Siquijor, their locations were pinned down on a generated geographic map of the island. Taking into consideration the research respondents and their answers to the interviews, the year they originally acquired their fujipani specimen was also indicated on the said map. To also show the time periods, specimens acquired between 2006 and 2010 were indicated in red color, the ones acquired between 2011 and 2014 were indicated in orange color, while the plants acquired in 2015 up to present were shown in yellow field. The finished map is shown in Figure 8. The resulting map determines the time period where more specimens were dispersed. Out of the nine visited gardens, six gardens acquired their fujipani specimens rather recent between 2016 to 2019.

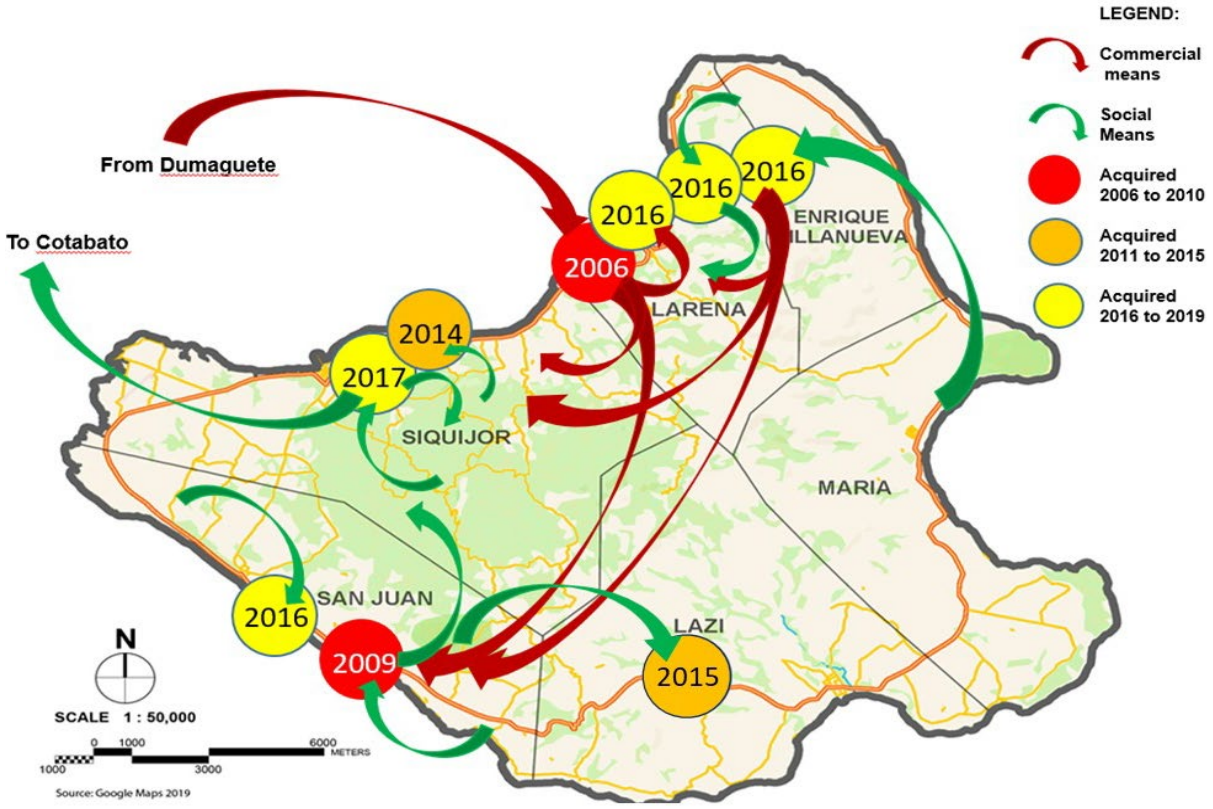
5. Assessment of Results

Based on step one of the research methodology, it was observed that the highest concentrations of the plant's occurrence along the circumferential highway were recorded in the towns of Larena and Siquijor. The most notable occurrences of the *Plumeria pudica* Jacq. were observed predominantly in household gardens.

The municipality of San Juan recorded the third highest occurrence of the *P. pudica* where it was observed being used in gardens in a mix of commercial establishments, resorts, and residential houses. The results led to pursuing a more in-depth observation and documentation of the *P. pudica's* presence in the said three towns.

On performing steps two and three, it was learned that the individual qualified gardens acquired their specific fujipani specimens because they find the plant very attractive when seen from their original source. The plant's aesthetic appeal is attributed to the unique leaf shape, the straight bushy growth, and the prolific white clustering flowers. Ease of propagation also led to their quick acquisition and eventually an equally easy propagation in their own gardens.

Figure 8: Map of *Plumeria pudica* occurrence based on interviews which indicate the garden location on the island and the year it acquired a plant specimen. The image also shows the acquisition and dispersal mode. The map was generated with the help of the students of the Archi 211 and DBE 397 classes of the UP Diliman College of Architecture in the first semester of academic year 2019-2020.



Through the interview answers, it was learned that out of the nine (9) dispersal candidate respondents, seven (7) of which acquired their original specimen through social specimens through commercial means. Furthermore, three (3) out of the nine (9) respondents dispersed the plant further by social means, giving away to friends and acquaintances their propagations of the plant. Two (2) respondents, particularly the two plant growers, claimed to have commercially sold the plant to a number of customers. Four respondents stated they did not knowingly propagate the plant and further dispersed it to others. Results are further tabulated in Table 5.

Table 5

Means of dispersal tabulation

	Commercial	Social	None
Means of Acquisition	2	7	0
Means of Further dispersal	2	3	4

On mapping the results of step four, the gardens were mapped out against the acquisition year of the *P. pudica* specimen. The accomplished map showed an idea of the probable dispersal timeframe of fujipani on Siquijor Island. It also illustrates that five (5) of the nine (9) probable dispersal candidate respondents only emerged in the more recent years between 2016 to 2019, confirming the theory that the dispersal of the *P. pudica* in gardens became prominent in a more recent timeframe. The acquisition and dispersal modes were also indicated on the map.

The interview tabulation and the generated distribution map also show the oldest presence of the plant being in Larena town, which is confirmed in the garden ocular and the interview.

When the researcher was doing the garden ocular, he visited Mrs. Cayongcong who noticeably had the most superb and abundant *P. pudica* presence in her garden. The researcher's interview revealed that she purchased her original specimen from a grower in the same town, which is Ms. Bantilan. The researcher, through the help of the hired local driver, located Ms. Bantilan, who is a local plant seller residing in Larena. Ms. Bantilan claimed that she was indeed the original source of *P. pudica* in several gardens located in the towns of Larena, Siquijor, and San Juan. She narrates that she commercially acquired the original plant in 2006 from a grower in Valencia, Dumaguete. She propagated the plant through cuttings and sold several of them in the following years to locals and resort landscapers in both Siquijor and San Juan. Based on this, Ms. Bantilan is the possible original source of *P. pudica*_specimens on Siquijor Island.

6. Conclusion

Based on results, *Plumeria pudica* Jacq. has grown to have a prominent presence on Siquijor Island. This could be very well seen by its practical ubiquity in household gardens flanking the island's main circumferential road particularly in Larena and Siquijor towns. But this has only been a phenomenon experienced in recent years, though data from the research indicates that the plant was present on the island as far back as 2006.

The plant's quick dispersal on the island could be attributed to its aesthetics, specifically the structure and the presence of the prominent white flower clusters. But the propagation ease through cuttings is the key how it was dispersed so easily.

Further, the more popular means of *P. pudica* dispersal is by social transfer – usually handing down propagations of the plant to a neighbor or friend. This illustrates a probable model of how exotic plants could be socially dispersed as an ornamental plant in gardens, particularly in the provinces where communities are immersed in more ecologically delicate environments.

Fujipani on the island could be treated as a change indicator. Its short but evident presence could create opportunities and threats. The popular presence of the fujipani and the social nature of its dispersal on the island could further be explored with how it could be used for wayfinding and placemaking in Siquijor communities. Its salience on the highway may be enhanced for planning purposes.

On the other hand, since *P. pudica* is an exotic plant, its fast dispersal could make it potentially become naturalized and hopefully not become invasive. Reading in between the lines of the study could aid in the avoidance of other invasive ornamentals on the island in the future. The distribution method could be utilized to educate people regarding the dispersal of introduced plants.

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