
Mapping the Distribution and Dispersal Profile of *Plumeria pudica* as an Ornamental Plant in Siquijor Island



Figure 1. The home gardens around Siquijor Island have grown an undeniable presence of an exotic tree species. This new salient species is *Plumeria pudica*, a kalachuchi variety called fujipani by the locals. In a span of 5 years it has become a common fixture in residential and commercial developments along the circumferential highway. Seen in picture is residential garden in Siquijor town.

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Abstract

Siquijor is a small isolated island, accessible by about an hour boat ride from the nearest port of Dumaguete. But even with the isolation, a great part of its coastal areas is becoming highly densed with residential houses. Along with this urbanization, exotic plants are becoming noticeable in backyard gardens especially along the island's circumferential coastal road.

Plumeria pudica was introduced to the Philippines in the 1980's but it was only in the 2000's that it became popular as a garden plant in the Philippines. It is common as an ornamental plant in Metro Manila, but in recent years this *Plumeria* was becoming more noticeably present in household gardens and public landscapes in certain provinces. In the period from 2015 to 2019, a span of five years, the *P. pudica* became a common sight in household and resort gardens flanking the major roadways in Siquijor Island. The research would attempt to map the origins and the distribution profile of the plant in the island by determining *P. pudica*'s occurrence in the different towns. The study would also try to determine the distribution method by tracing back the source of major landscapes with pertinent presence of the plant.

Keywords: Siquijor, Exotic species, Landscape ornamental, *Plumeria*, plant distribution and dispersal

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I. Introduction

A. Background

Siquijor Island is known as province with many wonders, with a rich culture and history of healers and natural medicine practitioners. The book 'Siquijor's Mystical Wonders' (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 many of the healers dwell remain pristine, an ocular of it would reveal that the island is getting its share of urban developments, particularly in the influx of resorts and the realigning of the province's thrust towards tourism.



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

Visitors to the island would find that the coastal areas nearer to townships are becoming noticeably built up with contemporary-looking houses. The households also appear to use mostly exotic plant species in their gardens. Even commercial landscapes and resorts are visibly using introduced ornamental plants.

Kalachuchi (*Plumeria spp.*) in general are popular plants in the Philippines and in other tropical countries. The name refers to a commonly used group of plants in Philippine landscapes especially in streetscapes and coastal areas. It is usually equated with good tree architecture, robust thick glossy leaves and very attractive flower clusters.

Kalachuchi is associated with the genus *Plumeria* under 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* and *Plumeria rubra*, along with its varieties and hybrids in its roster. They have long been used in gardens and landscape design, to the point that it could be considered a favorite among local gardeners. New varieties of *Plumeria* have been rendered as sought after, with the emergence of new kinds and new flower colors.

Plumeria pudica is relatively a new species used in landscaping which first became popular in the 1980s. Through accounts of plant growers, it was in the year 2000 that *Plumeria pudica* became common as a landscape ornamental via shipped propagations from Bangkok. Plant importers brought in specimens from nurseries in Thailand, and since then *P. pudica* has been a fixture as an ornamental plant, earning a nickname spoon-leafed kalachuchi.



Figure 3. *Plumeria pudica* has become a common plant in Siquijor. It was also used in the landscape design of the Provincial Hall complex

The research proponent witnessed the second introduction of the spoon leaf kalachuchi locally in 2005. He also observed that in 2006 on Panglao Island, the species was practically non-existent. In a 2008 visit to the island, 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. In 2010 numerous houses in Dauis town had *Plumeria pudica* present in their gardens. By the last visit of the researcher to Bohol in 2013, the presence of the kalachuchi had already extended to the nearby Panglao town and in some areas, it was practically ubiquitous.

In 2015 the researcher visited and went around the island of Siquijor, but did not notice the presence of *Plumeria pudica* planted around gardens. When he returned to the island four years later in 2019, the presence of the familiar white flower clusters was practically everywhere especially in areas flanking the circumferential highway. The sudden explosion of its presence on the island has prompted the researcher to make this research on the spoon-leafed kalachuchi.



Figure 4. One of the reasons mentioned by garden owners why they decided to grow the plant in their gardens is that *Plumeria pudica* has profuse white flower clusters.

Plumeria pudica is a tree that is native to Central and South America, in Venezuela, Colombia and Panama (Barwick 2004). It is introduced to 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 backyard plant in households.

As reported by local gardeners, the spoon-leaved 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 maintain. Its aesthetics bank on its straight upright branching growth, spoon-shaped robust whorled leaves and prolific clusters of white five petaled flowers (which is the identifying trait of most kalachuchi plants). On Siquijor Island it is called fujipani, which is misleading to some users as it sounds like being a Japanese plant.

B. Statement of the Problem

On an initial ocular of Siquijor, *Plumeria 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 *Plumeria pudica* get to be dispersed and distributed in a small community model. Since Siquijor is one hour ferry ride away from Dumaguete and does not have access to its own commercial airport yet in the time of research, its closed isolated nature would be a good model to study the distribution behavior of the plant among garden users on the island. Since the *Plumeria* became common in a short period of time, it would be ideal to map out the distribution of the plant on the island and attach a time frame to its dispersal in these localities.

C. Significance of the Study

Invasive species have become an ecological concern for a lot of places. 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 zoology. In the past ornamental species like *Lantana camara* and even *Plumeria spp.* (documented by Alvina and Madulid as introduced in the galleon trade by the Spaniards in their book published in 2009). These species mentioned are common in countryside landscapes, *Lantana* observed being present in brush areas along highways all over the country. The latter species has specimens observed growing in hard-to-reach cliffs in Mindoro and neighboring islands.

The *Plumeria pudica*'s short dispersal history would be a good basis showing how an ornamental could potentially become naturalized, since now it is on the brink of becoming ubiquitous in certain Philippine islands. Since the plant is observed confined in households, not yet encroaching into natural landscapes, it gives a good model on how humans as users could aid in dispersing a plant in a specific locality.

D. Goals and Objectives

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

The study will optimistically achieve these objectives:

1. Learn how the plant is currently distributed to show occurrence of the *Plumeria 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. If possible learn about the users' demographics, dispersal methods and reasons why the plant was distributed.
3. Learn where *Plumeria pudica* originated from in the case of the specimens in Siquijor and how it entered the island. This will be achieved by trying to trace and backtracking the source of plants in several gardens.

E. Scope and Limitations

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

With regards to tracing the origins of the specimens on 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, the possibility of having multiple sources of the specimens will not be explored. It will only deal with the dispersal methods of this particular dispersal loop.

The data collection on Siquijor Island was limited to three days so methods and ways of collection worked on this time constraint.

While doing the ocular, the research did not document plants growing in wild patches. It only dwelled on specimens growing in garden settings. The research did not explore the wild distribution of *Plumeria pudica* if there is any.

II. Research

The book *Flora Filipina* from Acapulco to Manila (Alvina, Domingo 2009) lists close to 50 plant species that were brought to the Philippines via the galleon trade and one of it is *Plumeria rubra*, which is widespread used as an ornamental in the Philippines. Though *rubra* is naturalized in a lot of island in the Philippines, in Siquijor, *Plumeria pudica* is much more noticeable in presence compared to the long established *Plumeria rubra* or even the *Plumeria obtusifolia*.

In a personal interview with Ray Ong, a horticulturist and Philippine Gardens editor of the Philippine Star, he stated that *Plumeria pudica* was introduced to Philippine horticulture in the early 80's by Ely Bardenas and was since then circulating among private collectors around Metro Manila. But in the early 2000's, the plant experienced a garden renaissance when it was reintroduced through imported propagations grown by Bangkok nurseries. It quickly became popular among local gardeners because of its beauty and its growing and propagating ease.

Adrian Lazaro-Lobo and Gary N. Ervin in their recent study entitled 'A global examination on the differential impacts of roadsides on native versus exotic and weedy plant species' in 2018 discussed the crucial and delicate role of infrastructure roads as a dispersal for weeds and other invasives. This research was planned taking off from this premise and will focus on the probable dispersal of the *Plumeria* specimens along the circumferential highway in Siquijor Island. A plus factor is that the exposure on the main highway makes the studied plants more visible and gives maximum ornamental and aesthetic appreciation.

It was also checked if there are existing flora surveys of Siquijor Island. Researcher came across several articles outlining simple lists of plants that could be seen in Siquijor, particularly Mt. Bandilaan. An article by Adona San Diego on the Philippine Star website dated May 2006 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 *Plumeria pudica* was shown to her, which she did not recognize. It was only when she was told that it was a form of *kalachuchi* that she remembered that the plant has a healing use.

Other previous flora researches 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 *Plumeria pudica*.

A. Definition of Terms

Plumeria – genus of the studied species and is associated with the general group of ornamental trees called *kalachuchi*.

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

Spoon-Leafed Kalachuchi – the local common name given to *Plumeria pudica*

Fuijipani - is the local vernacular name given to *Plumeria pudica* on Siquijor Island. Further scrutiny revealed fujipani is derived from frangipani, probably 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

Based on Lazaro-Lobo and Ervin's study, this research was carried out under the premise that the *Plumeria pudica* concentration in Siquijor Island will be observed along one of the perceived major dispersal methods of the plant, the circumferential highway. Observations and documentation for the research was done in proximity of the subjects to this main artery. Though some are not located on the main road, good access to it was considered.

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 6 municipalities of Siquijor.



Figure 5 Siquijor map showing all 6 municipality boundaries and the main circumferential road – mapped out in red color.



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 was furnished a vehicle and driver to go around the circumferential highway and observed the occurrence of the *Plumeria* along the road. This was performed by taking note of the time difference in between occurrences of the plant 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 two days. The results of this initial ocular was tabulated as shown in Table 1.

Table 1: Timing intervals of plant occurrence on main highways in Siquijor

Town/Locality	Average time interval of occurrence	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 was recorded in the towns of Larena, Siquijor and San Juan. In Larena and Siquijor, the occurrence of the *Plumeria* was observed to be predominantly in household gardens, where they are planted fronting the road receiving much sunlight

In the municipality of San Juan, the *Plumeria* was observed 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 *Plumeria pudica*, the 3 towns were suspected candidates as source of the plant. An ocular of the gardens having unique or highly noticeable presence of the fujipani was performed.

It was qualified that these 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 and 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. When visited, the gardens were photo- documented and the garden owners were interviewed.

Backtracking was also performed asking the garden owners where they acquired their original specimen. If it was possible these gardens were also visited, documented and eventually interviewed. This was done to optimistically find the probable source of the fujipani's lineage.

Dispersal agent candidates documented were the following shown in Table 2.

3. Interview of fujipani local dispersal agent candidates

Plumeria pudica was also observed in several resorts in San Juan Town 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 the scheduled focus group discussion organized by the Provincial Government. Out of three resort/lodging owners interviewed, only one was familiar with the *Plumeria pudica*. Her response was included in the data.

Other participants of the FGD were also asked about their familiarity with fujipani. This was carried out 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.

The possible *Plumeria* dispersal candidates - the garden owners and growers were each interviewed and asked the following data:

- Specimen source for the specific garden
- Year it was acquired
- Number of years the garden has grown the *Plumeria pudica*
- 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 whether 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 still recorded to further qualify the reasons of dispersal.

The Provincial Capitol FGD respondents were also asked the same questions that were presented to the probable dispersal candidates in the ocular. The answers were tabulated in Table 3.

The people interviewed were also asked the reasons why they acquired *Plumeria* specimens to plant in their respective gardens. Some interviewees gave multiple answers.







'The plant is beautiful' is the most common answer which is also based on the aesthetic properties of the fujipani. They commonly attribute this to the prolific white flower clusters that most owners claim do not follow a season (though this fact will have to be further observed in another 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 considered socially affected. The ease of cultivation and propagation reason for acquiring on the other hand is based on personal preference.

'The plant is nice as seen growing in another person's garden' is another reason cited. This answer varies as some respondents have acquired specimens from varying sources (could be a neighbor or another type of 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 were growing the plant in their own respective gardens. Their personal choices were influenced by the neighbor, etc. Another respondent answered because she was told she needed to a fujipani planted in her garden. She has not

seen the *Plumeria* in person but it prompted her to locate and grow one which is also evident of social influence. The responses are shown in Table 4.

Table 2: Observed and Documented Dispersal Candidate Gardens

Locality	Owner	Garden	Reason chosen to be documented	Type of establishment
San Juan	Gay Therese Bucol		The <i>Plumeria</i> was planted at a prominent area of the garden near the road	Residential
Siquijor	Gliceria Silim-Cenas		<i>Plumeria</i> was plenty and noticeable from road arranged rhythmically along main pathway	Residential
Siquijor	Celynn delos Reyes		Specimens were healthy and highly visible from the road	Residential
Siquijor	Owner out of the country		Specimens plenty and highly visible from road	Residential
Larena	Soledad Banguis		Garden seller referred by my assigned driver	Commercial
Larena	Jesusa Kilat		Trees in 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	Amancia Cayongcong		Specimens are highly visible from the highway and are really spec	Residential
Larena	Amy Bantilan		Grower referred by garden owner Amancia Cayongcong	Commercial

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?
Celyne delos Reyes	Siquijor	2014	4 to 5 years	Social- Maid acquired it	Not given away
Gliceria Silim Cenas	Siquijor	2017	3 years	Social- Given by neighbor	Social – Given to friends locally and to sister in Cotabato
Amancia Cayongcong	Larena	2016	4 years	Commercial- Bought for 50 pesos from Amy Bantilan	Social – Propagated and given away to friends
Estelita Bonachita	Lazi	2015	5 years	Social- From friends	Just one specimen
Gay Therese Bucol	San Juan	2009	10 years	Social- Acquired from a friend	Social – Propagated and given to friends
Amy Bantilan	Larena	2006 or 2007	10 years but stopped after 2016	Commercial- Bought for 100 pesos from 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
Paul Maghanoy	San Juan	2016	3 years	Social – Acquired from neighbor	Not Propagated
Soledad Banguis	Larena	2016	3 years	Social – Acquired from a person in Maria town	Commercial – Propagated to sell to landscapers and enthusiasts
Jesusa Kilat	Larena	2016	3 years	Social- Given by banana vendor to her	Not propagated

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 visited gardens were distributed on Siquijor, their locations were pinned down on a 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 was shown in yellow field. The finished map is shown in Figure 7. The resulting map determines the time period where more specimens were dispersed. Out of the nine visited gardens, six gardens acquired their fujipani specimens within the last five years.

5. Assessment of Results

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

The municipality of San Juan recorded the third highest occurrence of the *Plumeria* where it was observed 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 *Plumeria pudica's* presence in the said three towns.

On performing research 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 aesthetic appeal they attributed to the plant's unique leaf shape, the straight bushy growth and the prolific white clustering flowers. The ease of propagation also led to their easy acquisition and eventually an equally easy propagation in their own gardens.

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 means, the most common being acquired from a friend or a

neighbor. The remaining two respondents acquired their 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 4, the gardens were mapped out against the acquisition year of the *Plumeria pudica* specimen. The map accomplished shows an idea of the probable dispersal timeframe of fujipani on Siquijor Island. It also illustrates that five (6) of the nine (9) probable dispersal candidate respondents only emerged in the last 5 years, confirming the theory that the dispersal of the *Plumeria pudica* in gardens became prominent in the recent years. 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 Amancia Cayongcong who noticeably had the most superb and abundant *Plumeria pudica* presence in her garden. The researcher's interview of her revealed that she purchased her original specimen from a grower in the same town, Amy Bantilan. The researcher, through the help of the local driver hired, located Amy Bantilan, who is a local plant seller located in Larena. Ms. Bantilan claimed that she was indeed the original source of *Plumeria pudica* in several gardens located in Larena, Siquijor and San Juan towns. 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 towns. Based on this, Amy Bantilan is the possible original source of *Plumeria pudica* specimens on Siquijor Island.

III. Conclusion

Based on results, *Plumeria pudica* has grown to have a prominent presence on Siquijor Island. These 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 the last 5 years, though data from the research indicates that the plant was present on the

island as far back as 14 years. The quick dispersal on the island could be attributed to the plant's aesthetics, specifically the structure and the presence of the prominent white flower clusters. But the propagation ease through cuttings is the key why it was dispersed so easily.

Further, the more popular means of *Plumeria 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 a more ecologically delicate environment.

Fuijipani 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 fuijipani 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 *Plumeria 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.

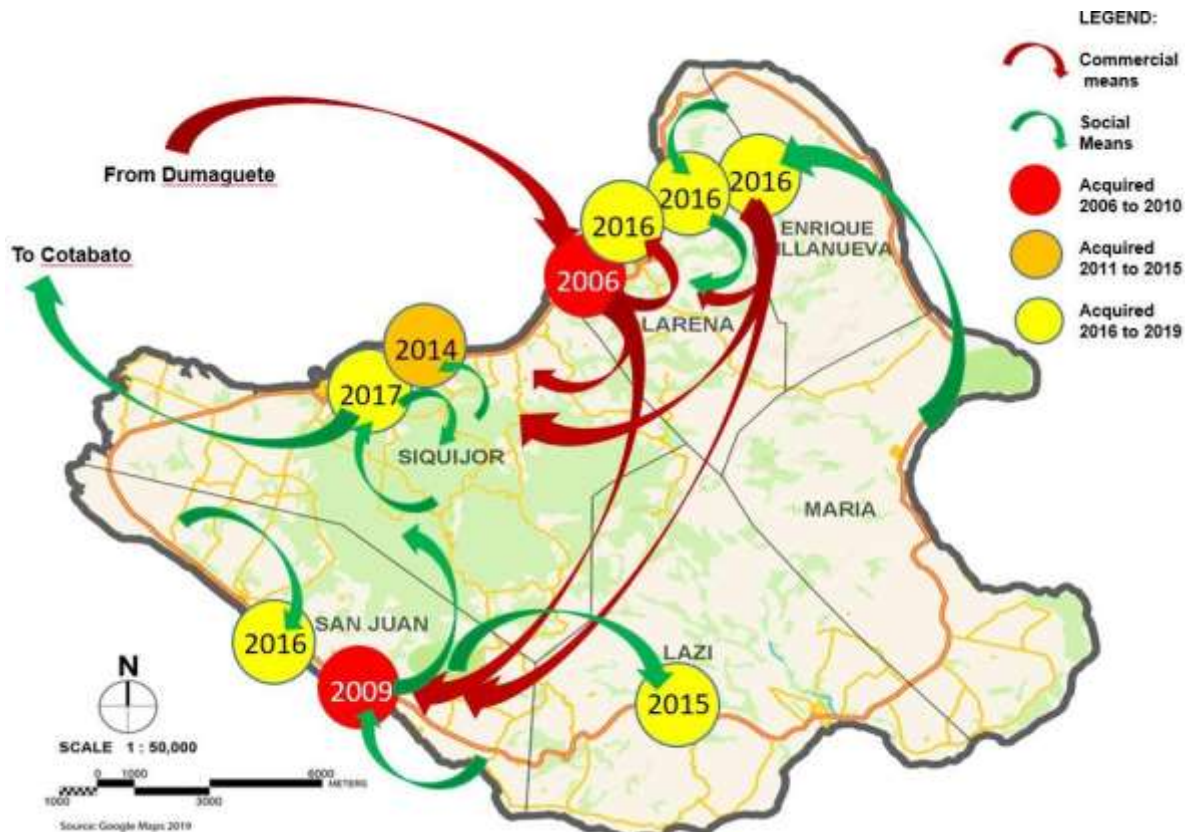


Figure 8: Map of *Plumeria pudica* occurrence based on interviews which indicate the garden location on the island and the year it acquired a plant specimen. The image also shows the acquisition and dispersal mode.

IV. Acknowledgements

The research proponents would like to thank the following:

The Siquijor Provincial Government, through the kindness of its provincial planning officer, Gay Therese Bucol and her staff for facilitating and lending out resources to carry out this research.

The interviewed respondents of this research for opening up their homes and gardens for documentation and for readily answering the interview questions.

The participants of the provincial focus group discussions for further insights and also for participating in the interview.

The local Siquijor provincial drivers for assisting in navigating and bringing us around the island for the initial ocular.

My hired tour guide, Glenn Rubio, who drove and painstakingly looked for the individual houses we needed to visit for the research, and acting as translator for some interviewees.

The students of the Arch 211 and DBE 397 classes of the UP. College of Architecture 1st Semester 2019-20 for the help and support in facilitating the steps for this research, and the generation of the Siquijor base map used in the research

Prof. Susan Aquino Ong for the support and additional guidance for the research

For the province officials and residents of Siquijor for the warm welcome and accommodating us in our stay duration.

V. References

- Alvina, Corazon and Domingo A. Madulid (2009). *Flora Filipina from Acapulco to Manila*. Makati: ArtPostAsia.
- Banguis-Bantawig, Renalyn et al. (2016). *Siquijor's Mystical Wonders*. Quezon City: Central Book Supply.
- Barwick, Margaret (2004). *Tropical and Subtropical Trees, A Worldwide Encyclopaedic Guide*. London: Thames and Hudson.
- Bernardo, Fátima and Palma-Oliveira, José (2013, May 1). Place identity, place attachment and the scale of place: The impact of place salience. *Psychology Journal*, Vol 4.2, 167 - 179.
- Lazaro-Lobo, Adrian and Gary N. Ervin (2019, January). A global examination on the differential impacts of roadsides on native vs. exotic and weedy plant species. *Global Ecology and Conservation*, Retrieved November 27, 2019, from <http://www.elsevier.com/locate/gecco>
- Madulid, Domingo (2000). *A Pictorial Cyclopedia of Philippine Ornamental Plants*. Makati: Bookmark Inc.
- Mansueto Josel B., Sia, Isidro C. and de la Pena, Mario (2015). *Healing practices of Siquijor Island: Documentation of Philippine Traditional Knowledge and Practices on Health and Development of Traditional Knowledge Digital Library on Health*. Siquijor State College. Retrieved November 20, 2019, from <http://www.tkdplh.com/index.php/ct-menu-item-3/ct-menu-item-5/158-folk-healing-practices-of-siquijor-island-documentation-of-philippine-traditional-knowledge-and-practices-on-health-and-development-of-traditional-knowledge-digital-library-on-health?fbclid=IwAR1qXNbmyI4rzd2ZvL3Euu0W6imf4DDqxYoR3hswR07HnSkqzIYqAkNNODw>
- San Diego, Adona (2005, March 6). A magical trip through Siquijor's Bandila-an Nature Park. *Philstar Global*. Retrieved November 20, 2019, from <https://www.philstar.com/business/agriculture/2005/03/06/269301/business>