ASSESSMENT OF FINANCIAL SOLUTIONS FOR PARQUE DOŇA INÉS

Interactive Qualifying Project Report completed in partial fulfillment of the Bachelor of Science degree at Worcester Polytechnic Institute, Worcester, MA

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Parque Doña Inés

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Abstract

Around the globe, urbanization, industrialization, and pollution continue to raise environmental concerns. In Puerto Rico, these concerns have manifested through deforestation and the loss or endangerment of many tree species. Parque Doña Inés is a developing arboretum that aims to address this concern through the collection, study, and preservation of tree species endemic to Puerto Rico and the Caribbean. Due to current economic hardships, the park requires additional short term funding to complete the construction of the park and open their doors to the public. Interviews with park management established the mission, goals, and needs of the park; further research allowed potential benefactors to be identified and investigated. The directory of potential benefactors was collected into two databases: companies and grant foundations. These databases will allow the park to effectively locate the funding they require to survive and expand.

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Authorship Page

Throughout the creation of this document all team members put forth a collaborative effort to generate and revise the various sections.

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Executive Summary

Parque Doña Inés (PDI) is a botanical garden in San Juan, Puerto Rico that is attempting to obtain a larger collection of endemic Puerto Rican trees and become certified as the germplasm bank of Puerto Rico. Currently, the park does not have the financial resources to complete construction of various components required to begin regular operations. This IQP addresses the short-term financial difficulties of the park and attempts to provide solutions that may allow the park to reach its immediate goals of completion and expansion. The goal of the project is to identify various benefactors in Puerto Rico and in the U.S. who would be able to subsidize the park, thereby helping with its financial issues. To do this, we first discovered the park's current needs and long-term mission. Then, we identified multinational and local Puerto Rican based companies as well as U.S. based grant organizations that would be likely to give to the park. The team organized this information into two databases that are easy to use, easy to maintain, and that will be utilized by the park to obtain funds.

Presentations and interviews provided background information on conservation and the park's mission (see Appendix A). Identified potential benefactors may provide the park with sources of donations that it could use to complete construction before a sustainable source of income can be established. The team identified two areas of potential benefactors: companies associated with Puerto Rico and grant organizations that support conservation, the environment, education, and the community. The team collected information about companies that were based in Puerto Rico as well as companies that had locations in Puerto Rico, but were based elsewhere. The team also collected information about grant organizations that had the potential to give to PDI. This information was organized into two databases, one for the companies and the other for the grant organizations. These databases were organized so that information could be easily sorted and accessed in an efficient manner.

The mission of Parque Doña Inés includes becoming the germplasm bank of Puerto Rico, having a complete collection of Puerto Rican trees complemented by other Caribbean flora, and providing educational facilities for small children as well as graduate students interested in research. The short-term needs included completing construction of the park and opening to the public.

The databases that were compiled provided information on likely benefactors for PDI. The team found a *Caribbean Business* report that included the top 400 largest companies in Puerto Rico. All of the companies included in the report had an annual income of over \$12 million. The team used this listing as the basis for local Puerto Rican company research. Some of the top 400 companies not included into the database were universities and hospitals, as these organizations are not likely to give donations to the park being non-profit entities themselves. We determined whether the remaining companies had established philanthropic programs; if such programs were discovered then these companies were highlighted within the database and information about their philanthropy was included. The final database for the grant organizations was composed of organizations whose objectives aligned with those of the park in terms of conservation efforts in the Caribbean. Both the company database and the grant organization database provide the park with a comprehensive directory containing likely benefactors and

pertinent information concerning grant and company donations for the park. The databases can be easily updated in the future to remain current and accurate.

Through the completion of the project, the team recommends that there be an employee of the park assigned to manage and update these databases. This person would utilize the databases to contact the potential benefactors and gain financial support for the park. We suggest procuring the services of a grant acquisition company, which may be able to locate and procure additional grants and facilitate the application process. Addressing the park's mission of expanding the collection of endemic Puerto Rican and Caribbean trees, environmental education, scientific investigation, and passive recreation are also important tasks. The establishment of educational programs is an important function of a botanical garden, allowing further scientific investigation within the park. The addition of such programs may also allow additional grants to be applicable. Additionally, we recommend that the park develop community outreach programs and identify services that could be offered to the public. The park may utilize this and other services provided to achieve long-term sustainability, which is of paramount importance for the future of the park.

The future of Parque Doña Inés is in jeopardy. *The Assessment of Financial Solutions for Parque Doña Inés* has focused on short-term solutions to the park's financial concerns. The importance of preserving the mission of Parque Doña Inés is as significant as preserving the history of the small island. The creation of two databases to help address the financial issues of the park is the culmination of the project. It is our hope that the work done in the 7 weeks on location, and the previous term in Worcester will allow the park to obtain its short-term needs and successfully address its long-term mission.

Chapter 1 Introduction

Human influence on ecosystems is an ever growing concern among conservationists. As the general population grows and spreads, natural green space is threatened. While a problem in mainland areas, the relatively small size of islands amplifies the necessity for the residing human populations to employ eco-friendly technologies and practice conservation. Although the Caribbean islands are small in size, they possess an extremely rich diversity of plant and animal life, a property which is fairly exclusive to this region. Puerto Rico, a tropical habitat home to a multiplicity of flora and fauna that are in danger of becoming extinct, is an excellent example of this feature. Puerto Rico and the surrounding islands of the Caribbean, which retain only 11.3% of their primary plant life, have been identified as one of the top five hotspots in need of wildlife conservation efforts due to limited land mass and high concentrations of exotic flora populations. (Myers, Mittermeier, Mittermeier, da Fonseca, Gustavo A. B., & Kent, 2000)

In Puerto Rico, people have not ignored the richness of wildlife diversity nor the need for its preservation and are starting to devote a larger effort to conservation. Continuing efforts in Puerto Rico are especially effective in preserving endangered wildlife. Preservation is not easy as land in conjunction with the support from community and financial resources are needed to operate park reserves, supply information about conservation to the public, and provide space for wildlife.

One park that assumes the noble effort of conserving the native flora of Puerto Rico is Parque Doña Inés. This unique park is a newly formed tree sanctuary in the city of San Juan that plans to begin offering its numerous services to the public in the summer of 2009. Currently, the park includes an impressive 70-75% of Puerto Rico's endangered trees as well as roughly 200 of the total species of trees endemic to Puerto Rico. The park plays an important role in conservation, as it is the only entity in Puerto Rico licensed to transplant endangered trees and help with the reproduction of these significant species in order to prevent them from becoming extinct. Once it becomes fully established, the park plans to include examples of all of Puerto Rico's approximately 500 endemic tree species as well as species native to the Caribbean such as that seen in Figure 1, and will maintain their existence for years to come. (Dr. Alberto Areces, Personal Communication, January 2009)



Figure 1: Buttonwood Mangrove (Conocarpus erectus)

Parque Doña Inés is facing financial issues in completing construction and expanding its collection of endemic flora, both of which are needed to open the park to the public. The park is running on a meager budget of \$100,000 a year, working to preserve the endangered trees of Puerto Rico and other Caribbean islands. Due to the budgeting issues, the park is only expected to survive another two or three years on this inadequate funding (Dr. Alberto Areces, Personal Communication, January 2009). Due to the insufficient annual budget of this non-profit organization, the park is unable to expand its functions, maintain its collection, and publicize the importance of this cause.

The goal of our project was to provide Parque Doña Inés with potential sources of income that will allow them to develop and continue their conservation efforts, as well as to complete the construction of the park. In order to accomplish this goal, our objectives included determining the park's specific goals, assessing ways to feasibly secure funding for the park, and creating a database of potential benefactors to expedite networking connections.

Chapter 2 Literature Review

The team determined potential strategies to overcome financial issues pertaining to Parque Doña Inés (PDI). This chapter introduces background topics pertinent to this goal beginning with a brief historical overview of Puerto Rico and its economy. We then discuss conservation and its significance culturally in Puerto Rico and on a global scale. We also address networking and other related strategies for conservation funding. Last we describe the achievements of established botanical gardens. To begin we present data on Puerto Rico's demographic profile.

2.1 Puerto Rico

Puerto Rico is home to more than 3.9 million people, a sizeable increase from the meager fifty that Juan Ponce de Leon brought there to found the first colony. Puerto Rico is comprised of 3,425 sq. miles with San Juan, the capital city, occupying 77.2 sq. miles (*CIA World Factbook*. 2008). A large percentage of the population, approximately 11.1%, resides directly in San Juan. A vast majority of the remaining populous are scattered around the shoreline and forested regions surrounding the islands' metropolitan center. Figure 2 depicts the current population densities of different areas in Puerto Rico (Caussade, 2004). As a whole, the growing population has continued to produce an increasingly negative impact on the environment and on the future vivacity of many species of wildlife.



Figure 2: Puerto Rico Population Density (Caussade, 2004)

Since Puerto Rico was used as a trading depot while under Spanish rule, many exotic plants and animals were introduced to and flourished in the tropical environment. The Spanish eventually began growing and exporting a large portion of their goods directly from the island,

thus converting large portions of abundant forest into farm land, destroying much of the native forests and allowing invasive species, such as the African Tulip (see Figure 3), to flourish. (Bulmer-Thomas, 2003)



Figure 3: African Tulip Tree (Spathodea campanulata)

2.2 Importance of Tree Conservation

Throughout the world, biodiversity is being threatened by the impacts of human existence. Today, pollution, deforestation, and global climate change threaten the world's flora (Ledig, 1988). The Caribbean, with its rich biodiversity, has not been exempt from this threat. The Caribbean is composed of islands and thus space there is limited; human existence on the islands consumes land that trees could otherwise occupy. Therefore, conservation is needed especially in Puerto Rico. Dry landmass is very limited on the island and the natural habitat that trees thrive on is being diminished by the spread of human populations.

Unfortunately, limited resources have made the conservation of all the current endangered trees of the world improbable. Norman Myers, in his paper, "Biodiversity Hotspots for Conservation Priorities," suggests that in order to gain most of the resources at hand, hotspots for conservation should be identified and brought into focus (2000). With some areas having a large proportion of the diversity on a relatively small land mass, a focus on these areas would

result in a larger amount of plant species saved. Within these hotspots, Myers goes on to identify five regions in which the most conservation efforts should be focused.

The Caribbean is known to be one of the world's centers for biodiversity which is a result of the large changes in topography over short areas (Helmer, Ramos, Lopez, Quinones, & Diaz, 2002). Myers also identified the Caribbean as one of his conservation "hotspots," as it is in one of the top five areas he believed extra attention should be focused. He argues that a focus on Puerto Rico, as well as other Caribbean Islands, will allow for a good use of financial resources in terms of their relative impact on conservation.

Deforestation, pollution, and climate change are all affecting the biodiversity of the world's forests (Ledig, 1988). These effects have damaged forests and pushed a number of tree species into endangerment, such as the endemic trees seen in Figure 4. The loss of these trees will reduce the biodiversity and size of forests. For example, Latin American forests, some of which are similar to Puerto Rico's forest, have a great diversity of plants and animals among them. If the Latin American forests were destroyed, 66% of the world's plant diversity would be eliminated, along with 69% of the bird life (Ledig, 1988). These statistics offer proof that the focus of conservation in some areas will lead to more effective preservation of wildlife.



Figure 4: Cojoba (Adenanthera peregrine)

2.2.1 Importance of Tree Conservation in Puerto Rico

Without an effort to conserve and rejuvenate endemic tree populations in the wild, Puerto Rico would be in danger of losing some of its native tree species. The use of land to support Puerto Rico's economy and people has infringed upon land that had previously been home to many different populations of tree species. All three of Puerto Rico's current top exports of dairy, livestock and coffee require extensive plots of land. Although reforestation has occurred in recent years, much has been with invasive species rather than native Caribbean species or those endemic to the island. Parque Doña Inés has been working to collect and sustain these increasingly endangered trees in Puerto Rico.

2.3 Re-visioning Botanical Gardens

The very idea of a botanical garden is complex. One vision of a botanical or botanic garden, as stated in The American Heritage Dictionary is defined as "a place where a wide variety of plants are cultivated for scientific, educational, and ornamental purposes, often including a library, a herbarium, and greenhouses; an arboretum" (2000). This definition, though accurate of many of today's botanical gardens, does not showcase the many reasons why botanical gardens were formed. Some gardens were formed simply as an educational collection of plants; others were fashioned with a more specific goal of medicinal plants. Additional botanical gardens began as pleasure gardens for queens and royal families. More recently, the focus of botanical gardens has been to conserve and protect the plants of the world from extinction. The definition provides a basis for any garden to be considered "botanic" in nature, but different gardens use this general theme to provide very different experiences to the public. Some gardens focus on exotic or tropical flora and plants to interest a diverse community. One example of this is the Chicago Botanical Garden, which boasts both a Japanese and English garden (Chicago Botanical Garden, 2009). Others focus on endemic trees, to which the main goal is to conserve and protect endemic flora, such as Parque Doña Inés. The differences can also be seen in the many different features each park provides. The Indian Botanical Garden claims the largest banyan tree in the world as one of its unique displays (Thomas, 2006). The Royal Botanical Garden in Australia takes a unique approach to gardens with its fragrance garden for the blind (Bruninghaus, Jenket, McCann, & Papanicholas, 2006). Hence, each of these individual gardens showcases distinctive offerings to the community in which they are located.

Some of the functions that botanical gardens around the world provide are practically universal. Included in these functions are lectures, botany research, and general community outreach programs. Some special adaptations that botanical gardens have added are very current, such as the podcasts of the Royal Botanical Garden. Others are more traditional, such as the St. Georges Botanical Garden, which offer weddings and banquets in their garden. The New York Botanical Garden offers a wide variety of innovative functions including films, concerts, a "hands-on" gardening experience and volunteer programs for both middle and high school students. The New York Botanical Garden is also associated with a horticultural school that offers a two year program. (New York Botanical Garden, 2009) The functions that each garden provides create a unique experience that reflects both the community and environment surrounding it.

One of the most important aspects of any botanical garden that separates it from simply being a pleasure garden is the scientific approach the park takes toward the flora of the park. While most people entering a garden focus on the positive experiences of sight and smell, the scientists behind the garden's utilization as a public domain exhibit a true passion for plants and botany. As Sue Johnson explains, the gardens "link[s] aesthetic and scientific practices." (2004)

Along with a scientists love of plants comes the need to protect the species that they may study. One of the major goals of many botanists and botanical parks is conservation. PDI, for example, is almost exclusively focusing on the conservation of endemic trees of Puerto Rico. "Beyond school, knowing how to identify plants is the first step in conservation of local flora and has implications for local cultural heritage" (Johnson 2004). The nationalism associated with cultural heritage is an important reason for both creating a park with this function as well as educating the community of such endangered species. Botanical gardens could be vital for the survival of many species of plants that could become extinct for reasons from human habitation to climate change. This is a case of positive synergy that allows the public to enjoy and learn from the park and the scientists to be able to benefit from the financial role the public plays.

2.4 Parque Doña Inés

From Dr. Alberto Areces, a park founder and director, we learned that Parque Doña Inés is currently 20 acres in size. In 1999, a municipal land area was bought and leased for 30 years

to the Fundación Luis Muñoz Marín (see Figure 5). In March 2004, Dr. Areces and Dr. Ocampo began the collection of seeds and planting of trees. By February 2009, the park contained 1,000 trees. Of the total amount of trees there are 130 different species, 551 native trees, and 100 endemic trees. The nursery now has 100 more species of trees. No other Puerto Rican garden has a collection of native plants that can compare to the arboretum at Parque Doña Inés. The park also has the largest "out of forest" collection in Puerto Rico. Therefore, this park is of great importance to Puerto Rico as it is rich in forestation, improves the local environment, and promotes education and recreation in green spaces.



Figure 5: Fundación Luis Muñoz Marín

Puerto Rico used to have the vast majority of its land covered with forests. Today, only 25% of the island contains forests. A small fraction is endemic tree species, with a total of 3,126 native plants in these forests. Also represented in these forests is a quarter of the Caribbean flora (see Figure 6). Much of the flora on the island is threatened. A total of 52 species are considered in danger of extinction with approximately 20% of all the endemic species threatened. These facts propose the great importance of the conservation of trees in Puerto Rico.





Figure 6: Puerto Rican National Flower, Maga (*Thespesia grandiflora*) (left); Spider Lily (*Hymenocallis species*) (right)

In Puerto Rico, it is against the law to collect, touch, or reproduce any species threatened by extinction without a permit. The park was required to donate half of its plants to the Department of Natural Resources (DNR) for reintroduction in order to receive a permit. This permit can be utilized in its efforts to expand its collection of endemic tree species.

2.5 Strategies for Procuring Connections

Strategic approaches to conservation biology include direct protection and management, legal and policy reform, environmental education efforts and awareness, and economic incentives (see Appendix G). Each of these general strategies can be utilized towards funding for conservation of a park and endangered species at PDI. For example, a broad topic for direct protection would be the establishment of reserves or parks. Large parks funded by the national government, medium-sized parks managed by private organizations, or small community-run sacred groves may each have feasible financial integrity. Therefore, there are multiple models under each category that can provide strategies for financial stability to an individual or group wishing to practice environmental conservation.

Another strategy is media campaigns, which include global television advertisements or public outreach programs. All bring awareness and popular support to an organization. A recent example of this strategy is PETA's "Fur? I'd rather go naked" campaign, which raised questions on the morality of wearing fur. A mixture of different strategies will allow a non-profit organization to be successful with its community outreach. (Salafsky et al., 2002)

2.5.1 Networking

Sufficient networking and outreach efforts to companies and conservation organizations will aid PDI in achieving sustainability. A connection can increase cooperation, collaboration opportunities, and media coverage by building trust between companies or conservation agencies and non-profit organizations. This relation allows organizations to work together towards a unified goal. For example, PDI has already established a relationship with the New York Botanical Garden through Dr. Areces' previous employment there. The relationship gives smaller establishments a greater ability to become better known in their specific expertise due to the influence of the larger foundations. These relationships among non-profit conservation groups and established associations permit greater use of strategies towards a common objective.

2.5.2 Grant Acquisition

Grant opportunities are available for individuals or groups in a myriad of project scopes including research, planning and capital improvement. There are many foundations and organizations wishing to assist both small non-profit groups and environmental conservation efforts. This is especially true for U.S. based grant foundations as there are greater opportunities to obtain generous benefits for organizations in Puerto Rico that support eco-friendly causes.

Grants are a valuable asset to non-profit organizations. Typically, they are distributed as lump sums in response to an application, but they can also be dispersed as an annuity on a periodic basis. Other grant types are continuous or renewable and these provide for long term funding. Currently, PDI receives an annual grant and lease from the Fundación Luis Muñoz Marín (FLMM). In order to achieve financial sustainability, however, they require additional sources of income.

2.6 Summary

The material covered in the literature review describes information pertinent to the investigation of financial solutions for a small non-profit conservation organization. The history of Puerto Rico and the factors that have led to environmental disruption on the island illustrate the importance of the conservation of trees and those organizations that protect endangered flora species. The unique potential of botanical gardens, as well as features of conservation

organizations contribute to the discovery of information that expedites procuring donations. This assessment has contributed to the design of a networking plan for PDI that will establish reliable means of communication and collaboration with other conservation organizations and companies. In turn, improved networking capabilities for PDI can be a catalyst for a financially sustainable future, by enhancing the likelihood of procuring funding through grants and donations.

Chapter 3 Methodology

The goal of this project was to identify sources of income that the park can use to become self-sustaining. These sources are vital to the conservation efforts and financial stability for the completion and operation of the park. To realize this goal, the team completed a list of objectives; the first of which was to determine the park's mission. Based on this information, we identified potential benefactors in Puerto Rico and the United States. The list of benefactors was narrowed down to include organizations, which based on criteria listed below, were more likely to support the park. We created a database of these identified parties as well as the information necessary to best approach them. This chapter outlines the methods the team utilized to complete the project objectives and achieve the final project goal.

3.1 Determine the Park's Mission

Dr. Alberto Areces and Gabriella Ocampo, the park's founders and directors, gave us an introduction to the park. We discussed the formation of the park, examples and descriptions of the current collection, the stories behind some specific items in the collection, and the importance of preserving biodiversity through conservation. Enhancing this lecture, Dr. Areces guided the team on a tour through the park.

The second step to determining the park's current needs and mission was a more in-depth interview with the two directors; they described how the park currently plans to accomplish its long-term mission. They paid special attention to what aspects of the park will be continually present and how these aspects can be used to acquire funding for the park.

In addition to the in-depth interview held with Dr. Ocampo and Dr. Areces, we interviewed D. Sperry Brown Jr. to complete the determination of the park's mission. As the Nursery Coordinator and longtime inhabitant of the island, we interviewed Mr. Brown about the new, but accomplished nursery (see Figure 7), daily operations of the park, goals of the park, and Puerto Rican culture.



Figure 7: Germination Area of the Nursery

3.2 Assess Ways to Feasibly Secure Funding for the Park

This section discusses how we identified potential benefactors in both Puerto Rico and the United States who could contribute funding. More specifically, we elaborate on why we focused on major local and multinational companies and U.S. foundations. We describe how we identified characteristics of the park as potential aspects that could be focused upon for donations from these businesses and establishments. We then created two databases to organize the potential benefactors and the pertinent information needed to contact them for donations.

3.2.1 Identify Potential Benefactors

Using the internet and phonebook, in addition to suggestions from interviews, we created a broad list of potential benefactors in the United States and Puerto Rico. In order to narrow the list of companies in Puerto Rico and foundations in the United States, the group identified characteristics of the companies that would make them more likely to donate. These characteristics included companies that damage the environment, companies that use many environmental resources, and benefactors that have conservation goals in mind.

Local Benefactors

To identify the companies most likely to donate to PDI in Puerto Rico, we discussed with the liaisons methods that have worked in the past to procure donations. We focused on large companies, as their size may allow them to donate greater amounts to PDI. In addition, acquiring larger donations from fewer companies would require less time and effort for the liaisons, rather than contacting and applying for smaller donations from a multiplicity of lower revenue companies. We focused upon companies that had a negative effect on the environment and, in turn, would want to improve their image with the community; these companies included oil, pharmaceutical, and large production manufacturers.

Benefactors in United States

To identify foundations in the U.S. we again used information given by the liaisons to focus our search. We concentrated on foundations that have an interest in conservation and the environment as this is the topic most associated with PDI. We also focused on community and educationally directed grants, since the park plans on opening its doors to the public and providing environmental education and scientific research for students and children.

3.2.2 Identify Aspects that could be Utilized for Donations

In order to complete construction of the park, funding must be appropriated efficiently. We consulted park administration to generate a list of projects that need to be completed in the park and cataloged existing features. The project list can then be used to direct future donations in a manner that will allow the park to finish construction and open its doors to the public as quickly as possible.

3.2.3 Create a Database of Potential Benefactors

After we gathered a list of potential donors in the U.S. and Puerto Rico, we created two databases to permanently store all of the benefactors in. The databases included the necessary contact information for establishing connections between the park and these organizations. Examples of column headings in the business database include: company name, possible donation type, market, revenue per year, 2007 revenue, headquarters location, whether or not it was based in Puerto Rico, if they had been previously contacted, and if they had given donations

in the past. The grant foundations database contains the following column headings: organization name, grant focus, possible donation type, average donation, renewability, location, and grant request submission date. Figures 8 and 9 illustrate the graphical user interface and column headings of the two databases.



Figure 8: Grant Foundation Database Column Headings



Figure 9: Company Database Column Headings

Both the company and foundation databases contain hyperlinks for each entry to corresponding biographical pages that describe them in more detail. The biographical pages contain contact information, financial data, grant and funding application instructions as well as any additional required materials that were too lengthy to include on the front sheet. Examples of foundation and company biographical pages can be seen in Appendices H and I respectively.

Upon completion of the database forms, we utilized the Microsoft Excel functionalities to add sorting and organizing features to each of the column headings. The sorting function allows users to filter out certain entries and then alphabetically or numerically organize the remaining list. This is very useful because it allows the user to quickly find a grant or company that would align with the focus for a particular project. For example, a grant is needed to fund the completion of the endangered mangrove forest project (see Figure 10); the landscaping aspect has already been completed through a gift in kind donation from a construction company that provided the use of a backhoe and operator for five days. The user would open the grants database and perform an alphabetically descending sort in the "Grant Focus" column which would group and organize all of the grants by their intended focus; another possibility would be to filter the grants which would then only display the listings that possess the selected focus. Now the user may also perform a sort by grant size which would reorganize the order in different grant focus groupings by descending grant amount. The final result is a tailored list of

foundations that make donations corresponding to the project mission and for the required amount of funding.

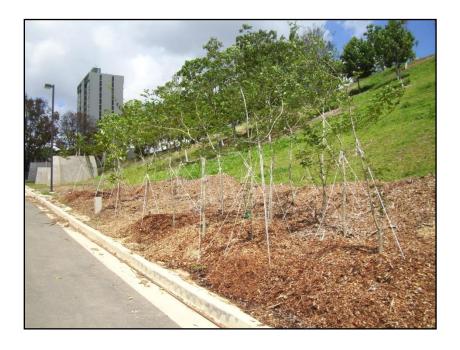


Figure 10: Uncompleted Mangrove Forest

The databases ease the process of contacting companies for donations and applying for grants from foundations by compiling all pertinent information into one place. The chances of the park receiving funds for further expansion and completion will be increased with the databases in place.

3.3 Conclusion

Parque Doña Inés is in need of financial stability. The park's management desire grant and donation sources to be identified as potential sources of income. Gathering the resources to both finish the park's collection of endangered, endemic trees and to open it to the public will provide future sustainability. Through interviews, the mission of the park was identified. Further investigations provided information on grant and donation sources that are applicable to conservation efforts from foundations in the United States and companies in Puerto Rico respectively. The final database created is an organizational tool that will help the park obtain grants and donations in order to complete the construction, fund the opening, and expand the park's endemic tree collection.

Chapter 4 Results and Analysis

This project provides park administration with a tool which will aid them in obtaining the additional funds necessary to complete the construction of the park and open its facilities to the public. In the following chapter, we describe our findings which address determining the park's mission, identifying and cataloging local Puerto Rican companies, cataloging U.S. based grant organizations, and creating two final databases of potential benefactors. In order to tailor our efforts to PDI's needs, the mission of the park's founders was examined.

4.1 Mission of Parque Doña Inés

One of the foremost goals of the park is to open the park to the public. Dr. Areces stressed that Puerto Rico does not have a botanical garden as the San Juan Botanical Garden and other gardens labeled this way do not qualify because they are more focused on decorative flora from other countries. He believes that Parque Doña Inés can offer a "different park, where you learn about native, endemic Caribbean flora." Dr. Areces also mentioned the park's goal of becoming a "depository germplasm bank for the flora of Puerto Rico". This is an important goal to the people of the park because the germplasm bank of Puerto Rico is currently located in Florida. Dr. Areces wishes to collect sufficient species over the next year to be able to ask for certification to become Puerto Rico's germplasm bank. Dr. Areces would like to have the resources and opportunity to collect more rare species which would allow them to get the certification and prestige worldwide that they desire. This would increase the probability of becoming financially sustainable in the future. Lastly, Dr. Areces mentioned his desire for publications and lab facilities to allow students and researchers to utilize the park for educational purposes. All together the park wishes to complete construction, expand its collection, and open to the public.

4.1.1 The Park and Its Founders

Over the course of the weeks we have been on site, we have discovered that Dr. Alberto Areces is extremely passionate about his work. He has been working in partnership with his wife, Dr. Gabriella Ocampo, for the past 7 years at Parque Doña Inés (see Figure 11). They moved to Puerto Rico in order to promote their dream of education and conservation biology to

revive the biodiversity of the island. His goal is to provide a place for the endemic trees of the island, spread awareness of the impact people have had on the ecosystem, and stress the importance of these conservation efforts.



Figure 11: Dr. Areces and Dr. Ocampo Collecting Specimens at San Cristobal Canyon

Through our discussions and tour of the grounds, Dr. Areces has explained his priorities for the park. He wishes the park to provide a natural place for recreation, be a green sanctuary for conservation of biodiversity, contain the rare plants from all over the Caribbean, teach about trees for local education as well as potentially provide volunteer work for students or other members of the community. His list of five functions for the park once it is opened is as follows: environmental mitigation, passive recreation, conservation, environmental education, and scientific investigation. From these descriptions, we decided what needed to be done in order for his list of future functions to be accomplished. This then assisted our determination of the short-term needs of PDI.

The implications of native species depletion were a recurring theme in our experience with PDI. Our conversations with Drs. Areces and Ocampo, as well as our travels around the island confirmed that the decorative, urban flora is not a representation of the natural heritage, nor is the landscape horticultural design done from an ecological perspective. It does not express

the diversity of Puerto Rican heritage and promotes the degradation of endemic flora and the popularization of the stereotype that urban trees are native. Also, invasive species along with the separation of males and females of a species preventing reproduction has impaired the conservation of the endemic trees of Puerto Rico.

The park already possesses facilities that will be utilized for the future opening (see Figure 12). These include walkways, parking lots, visitor's center and lookout tower. These relayed the importance of opening the park to the public as a way of ultimately gaining independent financial sustainability.





Figure 12: Future Visitor's Center (left); Lookout Tower (right)

4.1.2 Interview with David Sperry Brown Jr.

Longtime associate, D. Sperry Brown, transfers and maintains the nursery plantings in workstations at the back of the park. He brings a wealth of experience to Parque Doña Inés, having had his own business selling gardening plants in Puerto Rico before his service at PDI. While he acknowledges that the park has survived on volunteer efforts and minimal employment, he is concerned about the long range survival of PDI.

In an interview, D. Sperry Brown explained how the park was run and gave us some examples of how their current budget is appropriated. These areas included completion several major projects, including the nursery, as well as maintenance and supply costs. Though much is

needed to complete the park, the budget hardly covers the cost of maintenance. He explained the importance of the work we were doing due to the small budget of the park. Lastly, Sperry explained the relationship between the park and the Fundación Luis Muñoz Marín. Sperry explained that the foundation was responsible for choosing Dr. Areces' proposal to build a botanical garden on the land adjoining the foundation. This land belongs to the municipality, but PDI was given a 30 year lease with the option for renewal. The foundation currently provides an annual monetary contribution to the park, but both the park and the foundation would like the park to become financially independent and sustainable. Sperry's interview gave us more information for an overall perspective of the park that allowed us to complete our project more effectively.

4.2 Potential Benefactor Identification

The following section presents the compilation of the identified potential benefactors. These potential benefactors include local companies, multinational companies, and U.S. based grant foundations. Along with identification, we gathered comprehensive biographical information about each entity in databases.

4.2.1 Local Benefactors

For the list of companies within Puerto Rico that may be willing to donate, the liaisons suggested narrowing the search on companies that may be polluters, who may be inclined to donate due to bad publicity or environmental concern. They gave suggestions such as oil companies, which have a bad reputation in general for negative environmental impact. Another suggestion was pharmaceutical companies, which had been inclined to offer donations to the park in the past as pharmaceutical companies tend to use excessive environmental resources in manufacturing their products.

Through research of viable donation benefactors, we identified several additional aspects that allowed us to compile a final list. One aspect focused upon was the size of the companies. Larger companies tend to have a better developed philanthropic division and also have a larger amount of money available for donation. Location was another aspect considered. Companies based in Puerto Rico were considered more likely to donate due to a highly localized sense of patriotism for the island. Multinational companies are found to only donate to communities

surrounding established sites, and many times focus on only a few locations. Therefore, the list was focused on 262 Puerto Rican based companies with the highest revenue which was determined to be between 12 million and 4 billion dollars in 2007. Other multinational corporations were included if stores or manufacturing facilities were located in Puerto Rico. Several specific industries were included: agriculture, manufacturing, financial institutions, auto dealers, land developing and real estate, and insurance companies. These areas were focused on as some are destroying the environment with development and others are adding to the pollution problem on the island with manufacturing facilities. Many are also looking for good publicity within the community through an eco-friendly image.

4.2.2 Benefactors in the United States

Both the liaisons clarified what was important when determining the viability of U.S.-based sources for grant and donation purposes. They made it clear that they were looking forward to making connections within the United States that could become cooperative associates with whom the park could provide something in return for a donation rendered as well as seek out foundations willing to donate with no recompense. Dr. Areces supplied examples and suggestions on large foundations that have given to programs similar to Parque Doña Inés including Conservation International, Lindbergh Foundation, and the Fulbright Foundation (see Appendix J for more details). The information gathered from this in-depth interview provided a foundation for supplying Parque Doña Inés with a directory of sources that could be directly used to obtain funds for the future operation of the park.

Through investigations, the team found several factors that dictated whether donations to fund the parks operation were likely. Geographic factors played a large role in determining whether or not the park was applicable for certain grants. Many grants focus on specific geographical areas including cities, states, or regions. The team found very few grants that focused on the Caribbean region or Puerto Rico. Project types were also a limiting factor and those that did not focus on conservation, environment, education or community were excluded. A good source of foundations included those that were found to have already donated to established botanical gardens. Some examples of botanical gardens that the team referenced include Atlanta Botanical Garden, Chicago Botanical Garden, and New York Botanical Garden. These sources were deemed viable as foundations or companies who donated to botanical

gardens in the past should be more likely to donate to the Parque Doña Inés Botanical Garden. A tendency was also seen for foundations to have set ranges of donation amounts, while others tended to depend on project budget requests. This is an important factor for the park's grant acquisition strategy; this aspect is important as it will dictate whether the liaisons are looking for large amounts with no specific objective or a smaller grant for a specific aspect of the park.

In our search for grant foundations, we discovered many internet based foundation databases with hundreds of thousands of listings. These databases were maintained professionally and could only be accessed after a subscription was purchased. An additional page was added to the grant foundations database entitled "grant resources" where the team listed these additional sites. This was done because they were determined to be a very valuable resource for PDI in their quest for financial assistance. It is important to note that because many of these sites are professionally run, a subscription cost includes many services such as the automatic dispersal of grant applications to any foundations with aligning mission statements to that of the beneficiary. A subscription to one or more of these sites would open PDI up to a myriad of benefits that would be far more valuable than the initial cost of membership.

4.2.3 Specific Aspects of the Park that could be Utilized for Donations

Identifying areas of the park that may receive specific donations is important when requesting grants or donations. Many companies feel more secure about donating when the contribution is allocated for a specific aspect of the park. This also makes the park more accountable for its use of the funds. Specific projects of the park, as well as donation areas within those projects, were identified for this reason. All of these projects require funding in the following areas: maintenance, supplies, services, and general. The following table shows the specific aspects of the park and their status of completion.

Table 1: Identified Aspects of the Park to be Utilized for Donation Acquisition

Identified Project	Completion Required
Palm Belt	Yes
Entrance	No
Ceiba Cathedral	Yes
Bosque Borinqueño / Borinquen Forest	Yes
Bosque Caribeño / Caribbean Forest	Yes
Bosque Climax / Climax Forest	Yes
Overlook	No
Bosque Primigenio / Primordial Forest	Yes
Rocalla Cársica (Mogotes)	Yes
Bosque Ribereño	Yes
Memorial to the Trees of Puerto Rico	No
Interpretative Trails	No
Nursery	Yes
Essential Infrastructure	No
Maintenance Center	No
Compost (Recycling) Center	No
Charca (pond/fountain area) (see Figure 13)	Yes
Visitor's Center (see Figure 13)	No





Figure 13: Charca (left); Visitor's Center (right)

4.2.4 Databases of Potential Benefactors

The databases both contain a wealth of information that can lead to the successful acquisition of funding for PDI. The grant foundation database contains 46 listings with a majority of organizations that favor donating for more than one purpose. The full distribution can be seen in Figure 14.

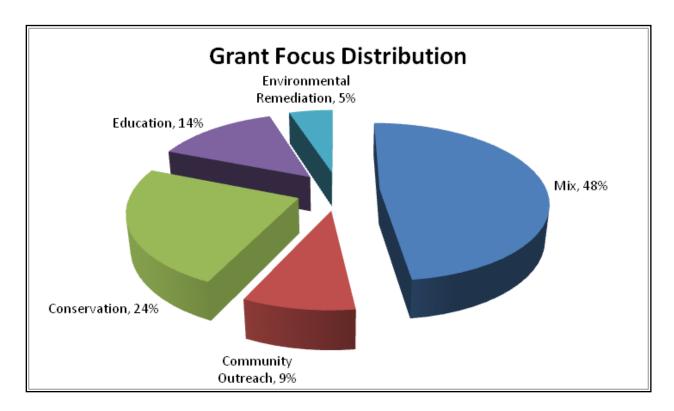


Figure 14: Grant Focus Distribution

These results suggest that a mass distribution of grant applications to the mixed focus benefactors should be the first endeavor in grant acquisition by PDI. Because the mixed focus foundations comprise almost half of the database listings, an effort here would stimulate the greatest and most immediate response. Following this effort should be subsequent submittals to foundations that focus on conservation and then education as they are the second and third largest grant focus categories.

The company database contains 262 listings that include multinational and Puerto Rican based businesses. The company listings were whittled down to contain only organizations with established philanthropic programs. The distribution by industry can be seen in Figure 15.

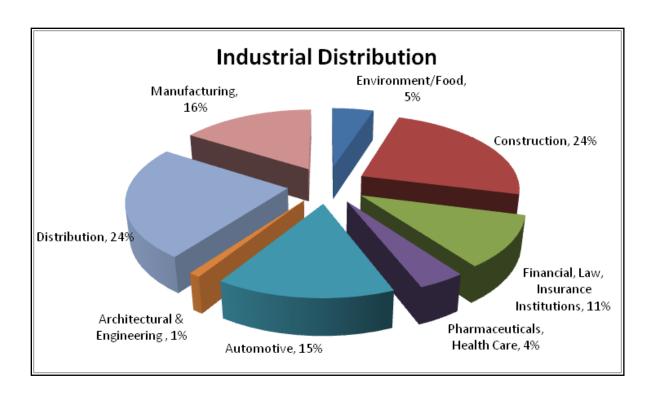


Figure 15: Industrial Distribution in Company Database

The industry breakdown in Figure 15 leads us to conclude that it would be best for PDI to contact companies involved in the construction, distribution, automotive, and manufacturing industries first as these categories would yield high percentages of probable donors and generous contributions.

Chapter 5 Conclusions and Recommendations

In this chapter, we present our final thoughts on Parque Doña Inés and the impact our final databases will have on its future. We also provide recommendations to the Parque Doña Inés staff to assist them in accomplishing the goals of the park. Finally, we give suggestions for potential IQPs and future projects that PDI can complete; both of which will benefit the park's longevity and help it fulfill its mission.

5.1 Conclusions

Parque Doña Inés is working to become financially independent so it can complete its collection of rare, endangered, and endemic Caribbean flora and open its doors to the public. In the future the park will also be a likely candidate to become the official germplasm bank of Puerto Rico. With short and unstable funding, the future of the park is in jeopardy and its mission may never be reached. However, with sources of funding the park will be able to survive and continue its conservation efforts. To provide this source of income, we expect that the two large databases will provide the park with the means to gain monetary contributions or gifts in kind. These lists are extensive and comprehensive; only the comparatively likely companies and grant organizations were included in order to heighten the chances for the park to receive funding. Furthermore, these databases were created in a way that enables easy access to the information.

The documents created by this IQP will aid Parque Doña Inés in its achievement of financial independence. In turn, this newfound financial independence will allow the park to complete its goals and become a prestigious conservation entity as well as a future germplasm bank of Puerto Rico.

5.2 Recommendations

Parque Doña Inés needs to take measures to sustain its operations in order to guarantee future presence of the park in the San Juan area. A newly hired public relations coordinator should professionally manage grant and contribution acquisitions. This person should also utilize, manage, and update the databases. Another option is for the park to invest in a company

that maintains its own extensive databases of grant foundations and connections to help with proposal processing.

Further assistance in fulfilling the park's short-term needs can be sought through the emulation of successful fundraising campaigns. Investigating past campaigns organized in Puerto Rico may allow the park to effectively organize a successful campaign on the island. Another course of action that is suggested is to continue networking and connecting with large sponsors. This is important as personal contacts are very important in Puerto Rico, where one connection may be the difference between success and failure for the park. Lastly, goals mentioned by Dr. Areces in the in-depth interview, but not directly related to the project, should be addressed by future projects at the park or perhaps through Worcester Polytechnic Institute's IQP program. These goals are expanding the collection of endemic Caribbean trees, environmental education, scientific investigation, and passive recreation. Such projects may include forming partnerships with universities to utilize PDI's facilities, or incorporating young students into educational programs (see Figure 16). These may lead to sustainability of the park and a virulent future.



Figure 16: Dr. Areces with Students at PDI

Future projects conducted at Parque Doña Inés may serve to accomplish the goals stated by Dr. Areces that this IQP did not address. PDI can work in tandem with other existing Puerto Rican IQP sponsors to develop new park features and programs, thus improving community outreach. One suggestion would be to work with corporations, such as First Bank, to improve their efforts of becoming eco-friendly by incorporating more endemic plant species in the landscaping around its facilities. Another project recommendation is to develop network relations with educational institutions to procure resources and construct scientific research facilities. This would open the doors for scientific investigation and research at Parque Doña Inés. A project to address long-term sustainability would also be a great asset to the park. The current project focused on short-term goals of the park and only touched upon the long-term mission. The temporary funding options provided by our project may lead to long-term sustainability in the future, however a thorough investigation of this subject should be completed to ensure the park's permanence. Lastly, we recommend a project to develop a community or outreach program for PDI. By identifying services that could be offered to the public, the park may be able to use this program as a step towards maintaining financial stability.

This park is a great addition to the Puerto Rican community. It offers a unique perspective on the biology of Puerto Rico's environment, as well as an actual representation of the harm that has been done to it. We hope that this project will allow the park to reach its current goals and expand its vision even further.

References

- Botanical Garden. (2000). *The American Heritage Dictionary of the English Language* (Fourth Edition Ed., pp. 215). Boston: Houghton Mifflin Company.
- Bulmer-Thomas, V. (2003). *The Economic History of Latin America Since Independence* (2, Illustrated, Revised Ed.) Cambridge University Press.
- Bruninghaus, M., Jenket, T., McCann, R., & Papanicholas, A. (2006). Website Development for the Royal Botanic Gardens.
- Caussade, A. (2004). http://www.armandocaussade.com/astronomy/light_pollution.html.
- CIA World Factbook. (2008). https://www.cia.gov/library/publications/the-world-factbook/geos/rq.html.
- Dávila, A. M. (1997). *Sponsored Identities: Cultural Politics in Puerto Rico* (Illustrated Ed.) Temple University Press.
- Dietz, J. L. (1986). Economic History of Puerto Rico: Institutional Change and Capitalist Development, Princeton University Press.
- Gössling, S. (1999). Ecotourism: A Means to Safeguard Biodiversity and Ecosystem Functions? *Ecological Economics*, 29(2), 303-320. doi:DOI: 10.1016/S0921-8009(99)00012-9.
- Helmer, E. H., Ramos, O., Lopez, T. D. M., Quinones, M., & Diaz, W. (2002). Mapping the Forest Type and Land Cover of Puerto Rico, a Component of the Caribbean Biodiversity Hotspot. *Caribbean Journal of Science*, *38*(3-4), 165.
- Johnson, S (2004). Learning in a Garden. In M. Braund, & M. Reiss (Eds.), *Learning Science Outside the Classroom* (pp. 75-94). New York, New York: RoutledgeFalmer, Taylor & Francis Group.
- Kiss, A. (2004). Is Community-Based Ecotourism a Good Use of Biodiversity Conservation Funds? *Trends in Ecology & Evolution*, *19*(5), 232-237. doi:DOI: 10.1016/j.tree.2004.03.010.
- Ledig, T. F. (1988). The Conservation of Diversity in Forest Trees. *BioScience*, 38(7), 471.
- Levesque, I., McLaughlin, B., Mezzone, C., & Paquette, A. (2006). Conservation Analysis in the Municipality of Toa Baja, Puerto Rico.
- MacDonald, G. F. (1992). In Karp I., Kreamer C. and Lavine S. (Eds.), *Change and Challenge: Museums in the Information Society*. London: Smithsonian Institute Press.
- Meléndez, E., & Meléndez, E. (1993). *Colonial dilemma: Critical Perspectives on Contemporary Puerto Rico*, South End Press.

- Missouri Botanical Garden. *Center for Plant Conservation*. Retrieved January 20, 2009, from www.centerforplantconservation.org.
- Myers, N., Mittermeier, R. A., Mittermeier, C. G., da Fonseca, Gustavo A. B., & Kent, J. (2000). Biodiversity Hotspots for Conservation Priorities. *Nature*, 403(6772), 853-858. Retrieved from http://dx.doi.org/10.1038/35002501.
- Oleksyn, J., & Reich, P. B. (1994). Pollution, Habitat Destruction, and Biodiversity in Poland. *Conservation Biology*, 8(4), 943-960. doi:10.1046/j.1523-1739.1994.08040943.x
- Salafsky, N., Margoluis, R., Redford, K. H., & Robinson, J. G. (2002). Improving the Practice of Conservation: A Conceptual Framework and Research Agenda for Conservation Science. *Conservation Biology*, *16*(6), 1469-1479. doi:10.1046/j.1523-1739.2002.01232.x.
- Schemske, D. W.,. (1994). Evaluating Approaches to the Conservation of Rare and Endangered Plants. *Ecology*, 75(3), 584. Retrieved from http://mblc.lm.worldcat.org/?genre=article&volume=75&issue=3&spage=584&issn=0012-9658&date=1994&aulast=Schemske&auinit=DW&title=Ecology&atitle=Evaluating+appro aches+to+the+conservation+of+rare+and+endangered+plants.
- Thomas, A. P. (2006). The Establishment of Calcutta Botanic Garden: Plant Transfer, Science and the East India Company, 1786–1806. *Journal of the Royal Asiatic Society*, 16(02), 165. doi:10.1017/S1356186306005992.

Appendix A: Mission and Organization of Parque Doña Inés

A Green Sanctuary for Puerto Rico

Parque Doña Inés will be a nature sanctuary within the Capital and will form part of the San Juan Ecological Corridor. It will promote the conservation of Puerto Rico's and the Caribbean's biodiversity, and help raise environmental awareness.

Conceived by he noted botanist Alberto Areces, this arboretum will feature unique Puerto Rican and Caribbean trees in an environment well-suited for developing different programs aimed at conservation and environmental education.

Appendix B: Conservation

The destruction of plant species and their intrinsic ecosystems through urbanization, pollution, and resource acquisition has not gone unnoticed. A conscious effort has been made by many governments and non-profit organizations worldwide, encouraging people and businesses to "go green". As a result, individuals and corporations alike are recycling and making strides towards reducing their expenditure of energy and physical resources in order to limit the negative effects modern society has on the environment. While the responses from "reduce and reuse" campaigns have been positive, a pressing need for endangered species rehabilitation still exists. The call to help revive threatened flora and fauna populations has been answered by organizations like the World Wildlife Foundation and the Center for Plant Conservation. These groups ensure that endangered plant and wildlife species are protected and attempt to revitalize their populations in their individual environments (Missouri Botanical Garden, 2009). Measures to protect and safeguard the plants and animals of the world are absolutely vital for the future ecological health of the earth.

Appendix C: Grants

Grants are a key way for non-profit organizations to sustain operation. Identifying and applying for these funds can be a huge enterprise, especially for small non-profit organizations. Identifying potential funds in the form of grants is one method that may allow for a stopgap between current minimal funding and a profitable business in the future. Funds from government, corporate, or private sources will help Parque Doña Inés continue its conservation efforts.

Appendix D: Cooperative Agreements

Possibly the most advantageous method to procure funding is through cooperative agreements. A cooperative agreement is effectively a conditional grant bound by either a verbal or written contract. After a cooperative agreement has been struck, the park would receive a donation and in return have to perform a specific function. The park has already successfully secured one cooperative agreement with the Homeowner Association. This organization donated money to the park so that a nursery could be built. Additionally, the nursery would function to supply the Homeowners Association with young trees that could be transplanted at various land development projects. Creating and utilizing relationships with the community in this way could provide revenue the park needs to complete construction, begin to function, and continue to expand.

Utilizing the aforementioned tactics for approaching potential benefactors and identification of local benefactors, additional figure heads at select local companies will be contacted and questioned about what goods or services they would require for a donation to the park. The replies will be categorized so that generic cooperative agreements, that are non exhaustive or harmful to the parks resources can be formulated.

Appendix E: Management

A main foundation of success that improves conservation as a whole is an effective management system. This system includes local community organizations combined with government policy and regulation. The governmental agencies offer economic incentive programs to those individuals involved in conservation of an area. These incentives, often money-based, are starts to sources of income for the practice of conservation. If a specific individual or organization has the ability to formulate such an arrangement, it can lead to progress and success in the future. (Levesque, McLaughlin, Mezzone, & Paquette, 2006)

Difficulties may arise concerning the establishment of community-based conservation programs. First, organizing such a cause without incentives of any sort will propose lack of income. Individuals may not wish to be involved with the government or businesses due to the possibility of losing their own personal finances. A community-based conservation program must include the entire society during development to ensure unanimous satisfaction. Finally, the progress of these projects may be delayed by conflicting ideas for land usage between the government and the community. (Levesque et al., 2006) In order to limit land use conflicts and maximize community approval, PDI must strive to establish and maintain avenues of local outreach. Updates to the PDI facilities and services desired by the community, but done in such a way as to appease governmental doctrines that provide subsidy, would greatly increase the chances of a sustainable future there.

Appendix F: Botanical Gardens and Education

Botanical gardens, like museums and zoos, are an interactive learning experience (Bruninghaus et al., 2006). When one studies information from a teacher or a book, one does not necessarily relate with the information supplied. These interactive ways of learning are especially able to allow people of all ages to learn in a new manner. George MacDonald writes that museums have

a responsibility to try to maximize the audience that museums' messages reach ... must therefore be aware and responsive to the requirements of those audiences. No museum, however high the quality of its information products, can be considered successful if it fails to make those products relevant to what concerns the society in which it exists. (MacDonald, 1992)

This reasoning toward the responsibility of museums to the public also applies to the responsibilities of botanical gardens. There is no use in creating an educational environment if the customers of such a venue are not interested in what they may be seeing or hearing. Aesthetics must also be considered; adults as well as children will not enjoy a tour of a botanical garden if they do not find the spectacle pleasing. This lays grounds for what a botanical park should offer the public: an interesting, relevant exhibit that permits the people to enjoy both learning about nature and viewing the collection.

Appendix G: Biodiversity Conservation Approaches and Strategies

Table 2. A preliminary taxonomy of biodiversity conservation approaches and strategies a

Protection and management	Law and policy	Education and awareness	Changing incentives
Protected areas* reserves and parks: IUCN categories I & II (Kenya Wildlife Service) private parks (Langholz et al. 2000)	Legislation and treaties* developing international treaties (Convention on Biological Diversity) lobbying governments (Sierra Club)	Formal education*c developing school curicula (World Wildlife Fund Windows on the Wild) teaching graduate students (Jacobson 1990)	Conservation enterprises* linked: e.g., ecotourism (Salafsky & Wollenberg 2000) unlinked: e.g., jobs for poachers (Salafsky & Wollenberg 2000)
Managed landscapes*b conservation easements (Gustanski 2000) community marine protected areas (Parks & Salafsky 2001)	Compliance and watchdog* developing legal standards (Convention on Trade in Endangered Species) monitoring compliance w/standards (TRAFFIC)	Nonformal education*c media traning for scientists (Jacobson 1999) public outreach via museums (Domroese & Sterling 1999)	Using market pressure* certification: positive incentives (Forest Stewardship Council) boycotts: negative incentives (Rainforest Action Network)
Protected and managed species*	Litigation*	Informal education*c	Economic alternatives*
bans on killing specific species (Convention for Regulation of Whaling) management of fur-bearing mammals (Freese 2000)	criminal prosecution (U.S. Fish & Wildlife Service) civil suits (Sierra Club)	media campaigns (Greenpeace) community awareness raising (Public Interest Research Groups)	sustainable agriculture and aquaculture (Margoluis et al. 2001) promoting alternative products (Viagra instead of rhino hom)
Species and habitat restoration*	Enforcement*	Moral confrontation*	Conservation payments*
reintroducing predators (U.S. Fish & Wildlife Service) recreating savannas and prairies (Stevens 1995; Dobson et al., 1997a) Ex-situ protection*	implementing sanctions (U.S. Fish & Wildlife Service) military actions/nature keeping (Terborgh 1999) Policy development & reform*	civil disobedience (Greenpeace) monkeywrenching/ ecoterrorism (EarthFirst!) Communication*	quid-pro-quo performance payments (Ferraro 2001) debt-for-nature swaps (Conservation International) Nonmonetary values*
captive breeding (zoos, aquaria, and botanical gardens) gene banking (Kew Gardens Millenium Seed Bank)	research on policy options (World Resources Institute) advocating devlution of control (Wyckoff-Baird et al. 2000)	environmental publishing (Island Press) web-based networking (forests.org)	spiritual, cultural, existenced values (Ehrenfeld 1981) links to human health (Meffe 1999)

^a Columns contain broad categories of tools. Each column contains five broad approaches (*) and then two examples of more specific strategies under each approach. Implementing each strategy involves using specific conservation tools (not shown). For each strategy, we also provide an example of an organization known for using this strategy and/or a reference describing and defining it. Citing specific organizations using a tool does not imply that this is the only tool this organization uses or that it is the only group using this tool.

^b This category primarily includes conservation actions in lands managed for natural resource production that do not fall into IUCN categories I-V (World Conservation Union 1994).

^c These terms follow those of Fien et al. (1999).

(Salafsky et al., 2002)

Appendix H: Example of Grant Foundation Biography Page

×	Letter of Inquiry				-		Grant Founda		Email			Fax Number	Phone Number	Main Contact	Parent Organization	Organization MacArthur Name Foundation
	Financial Reports						Grant Foundations Home Sheet		org	scorneli@macfound			(312) 726-8000	Director: Stephen E. Cornelius	N/A	MacArthur Foundation
	Multi-year Budget								understand how	conservation a	Foundation wo	peaceful world.	The MacArthur institutions con		Web /	Physical
	Most Recent Audit								understand how technology is affecting children and society.	nd security, ma	Foundation works to defend human rights, advance global Range in collaboration with Chinese	peaceful world. In addition to selecting the MacArthur Fellows, the surveys of the Gaoligong Mountain	The MacArthur Foundation supports creative people and effective California Academy of Sciences institutions committed to building a more just, verdant, and \$200,000 to complete biodiversity	Mission Statement	Web Address:	Physical Address:
	990 or 990PF	Required N							ake cities bette ecting children and	scorneli@macfound conservation and security, make cities better places, and partner agencies in Yunnan Province understand how technology is affecting children and society. Community Forestry International		ecting the MacAri human rights, ake cities bett ecting children an	irts creative peop ling a more just ecting the MacArt human rights,	tatement	http	
	Board List	Required Materials for Grant Submission							society.	places, and	dvance global	ur Fellows, the	e and effective verdant, and		://www.macfou	
	Strategic Letter of Plans Support	ant Submissi	conservation policy	support transboundary landscape	International Centre for Integrated Mountain Development \$400,000 to	for the states of Northeast India 2008	community forestry policy framework	\$350,000 to develop a regional	Community Forestry International	partner agend	Range in colla	surveys of the	California Aca \$200,000 to co	_	nd.org/site/c.	
	Letter of Support	9	policy	boundary lan	Centre for Invelopment \$	of Northeast	restry policy	evelop a regio	orestry Interr	ies in Yunnar	boration with	Gaoligong N	demy of Scie	Beneficiaries	IKLXJ8MQKrH	140 S. D Chicago, I
	Key Staff Resumes				tegrated 400,000 to	India 2008	framework	onal	national	Province	n Chinese	ountain	nces iversity		/b.3599935/k	140 S. Dearborn Street Chicago, IL 60603-5285 USA
	IRS 501(c)(3) Letter			959/k.BB2A/How_to_Apply.htm	Go to site LOI guidlines: http://www.macfound.		4answers@macfound.org.	LOI submissions m		ular_Caribbean.htm	on_Geographic_Prior	3995/k.3115/Internation	See site for additional information: http://www.macfound.org/site/c.ll	Additio	http://www.macfound.org/site/c.lkLXJ8MQKrH/b.3599935/k.66CA/MacArthur Foundation Home.htm	et USA
	Annual Report			\pply.htm	Go to site LOI guidlines: http://www.macfound.org/site/c.lkLXJ8MQKrH/b.913		org.	submissions may be sent by email to:			on_Geographic_Priorities_Latin_America_8211_Ins	3995/k.3115/International_GrantmakingConservati	See site for additional information: http://www.macfound.org/site/c.lkLXJ8MQKrH/b.101	Additional Information	ndation Home.htm	

Appendix I: Example of Company Biography Page

2007 Revenue: 1	18.5 Million				
	From the AGP Website:				
c	We are a commercial printer affiliated to Grupo Ferré-Rangel, the holding company of				
Description:	El Nuevo Día and Primera Hora.				
	AGP began operations in 1997. Since our inception, we have successfully delivered				
ļ.	print solutions to our clients in the growing and sophisticated markets of Puerto Rico				
a	and the Caribbean.				
Website:	http://www.agppr.com/				
Email:	via website: http://www.agppr.com/contact.html				
Phone: ((787) 641-5400				
VUULOCC.	Amelia Industrial Park, Lot 18 & 19, Diana Street Guaynabo, Puerto Rico 00968				
Mailing Address: P.O. Box 9066602 San Juan, Puerto Rico 00906-6602					
Notes: No environmental programs were found on the webpage. The webpwell created and it is possible that this company could provide ser					
	Return to Company List				

Appendix J: Suggested Foundations

Aetna Foundation

Alcoa Foundation

American Center Foundation

American Express Foundation

AT&T Foundation

The Blassom Fund

W.L. Lyons Brown Jr. Charitable Fund

Chisholm Foundation

Citigroup Foundation

The Commonwealth Fund

Compton Foundation

Nathan Cummings Foundation

Dana Foundation

The Arthur Vining Davis Foundation

Deutsche Bank & American Fund

Dupont Foundation

Sherman Fairchild Foundation

Forbes Foundation

J. Paul Getty Trust

The Grainger Foundation

Heinz Family Foundation

Johnson & Johnson Family of Companies Contribution Fund

Andrew W. Mellon Foundation

The Merck Company Foundation

The Rockefeller Foundation

Sanders Foundation

Sara Lee Foundation

The Starbucks Foundation

The Spencer Foundation

Eugene V. and Clare E. Thaw Charitable Trust

Stewart R. Mott Charitable Trust

Larinan Foundation

Henry J. Kaiser Family Foundation

William H. Donner Foundation

Kresge Foundation

Pew Foundation

Fullbright Foundation

MacArthur Foundation

Howard Hughes Medical Foundation (HHMI)

(www.imls.gov/grants.gov)

Institute of Museum & Library Services

America's Historical & Cultural Organizations

(www.neh.gov/grants/guidelines/AHCO_ImplementationGuidelines.html)

We the People Challenge

Endowment for the Humanities

Appendix K: Suggested Objectives by Gabriella Ocampo

March 16, 2009

For each potential source of income ID the way to approach them.

- 1. List of companies in PR as potential benefactors to PDI
- 2. List of companies in the US as potential benefactors to PDI
- 3. What kind of services we could offer at PDI to the public

Appendix L: Past Donations

				Cantidade		
Empresa	Compania/ Foundacion	Proposito	Total del Compromiso	Fecha	Cantidad	Balance Peniente
				Apr 2001	10,000.00	
				July 2002	10,000.00	
Abbott		Catedral de		Sept 2003	10,000.00	
Laboratories	Compania	Ceibas	40000	July 2005	10,000.00	0
Banco Popular		Bosque		Apr 2004	62,500.00	
de PR	Compania	Borincano	125000	Feb 2005	62,500.00	0
Empresas Diaz:						
Arturo Diaz,				Oct 2007	125,000.00	
Alfonso Diaz,		General-		Jan 2008	10,000.00	
Arturo Diaz	Foundacion	Parque	260000	Dec 2008	125,000.00	0
Amgen		Centro			,	
Manufacturing	Compania	Educativo	100000	May 2005	100000	0
	-	General-				
Pepsi America	Compania	Parque	25000	Apr 2005	5000	20000
_	-	-		Dec 2004	250,000.00	
				Dec 2005	250,000.00	
Fundacion		Centro		Dec 2006	250,000.00	
Angel Ramos	Foundacion	Educativo	1000000	Dec 2007	250,000.00	0
				Feb 2004	50,000.00	
				Sept 2005	50,000.00	
				Nov 2006	50,000.00	
Fundacion		Catedral de		Mar 2007	50,000.00	
Aireko	Foundacion	Ceibas	250000	Apr 2008	50,000.00	0
				Feb 2004	10,000.00	
				Sept 2005	10,000.00	
				Jan 2007	10,000.00	
		Vivero		Feb 2008	10,000.00	_
Bacardi Corp	Compania	Parque	50000	Sept 2008	10,000.00	0
				Feb 2004	10,000.00	
				Feb 2005	10,000.00	
				Feb 2006	10,000.00	
Fundacion		General-	10000	Feb 2007	10,000.00	5 0000
Carvajal	Foundacion	Parque	100000	Feb 2008	10,000.00	50000
Asamblea						
Legislativa						
(RC #1544	Б 1 :	Bosque	275000	1 2005	275000	
7/sept/2004)	Foundacion	Borincano	275000	Jan 2005	275000	0

				Cantida		
Empresa	Compania/ Foundacion	Proposito	Total del Compromiso	Fecha	Cantidad	Balance Peniente
Victor						
Gonzalez &				Pre		
Tania				FY		
Serralles	Foundacion	General	100000	2004	100000	0
				Pre FY		
Pfizer	Compania	Brochure	25000	2004	25000	0
Pfizer	Compania	Centro Educativo	100000			100000
Fundacion	- · · · · ·	Cinturon				
Luis A. Ferre	Foundacion	Palmas	75000			75000
El Nuevo Dia	Foundacion		250000			250000
El Nuevo Dia	Foundacion		230000			230000
Totales			2775000		2280000	495000