PRESERVING THE ORANGUTANS

Abstract

Orangutans are one of the closest animals related to human beings. Yet they are dying by the thousands, which is making an enormous negative impact to their population size. Deforestation and poaching are the biggest causes of deaths for orangutans. Deforestation in particular is caused by the clearing of land for in this case, palm oil production. A solution to this major problem is to create an alternate synthetic resource to replace palm oil in everyday products. Our project requires an estimated $8,000 for research and implementation, which beats the price of any other temporary solution currently out there. Our project is very much feasible with sufficient grants and donations and can be done in less than five years. The goal of this project is to save as many orangutans as possible and help them recuperate their low population numbers in the next decade.

Background Information

Orangutan, which means “person of the forest” in Malay, are given their majestic name because of their size and dominance in the wild. Orangutans live in the islands of Borneo and Sumatra in Indonesia. The climate in this region is tropical and with high humidity, which are the perfect conditions for wild orangutans. These creatures have a limited diet containing fruits, flowers, honey, tree bark, and bugs. The primary feature of orangutans is that they have orange fur. In addition, orangutans have a lifespan of up to 50 years in the wild and each female can only reproduce one to two children. Females only start reproducing when they are at the ages of 10-15 years, which makes it even harder for this species to rebound from a low population or catastrophic events which would result in a mass reduction in population number. An estimate of less than 14,600 orangutans and 54,000 live in Sumatra and Borneo respectively. Those numbers decrease even more as destruction become a habit of life in that area. The biggest reason for the decrease in orangutan population is deforestation because of the increase in palm

oil production. For increased production, removal of large areas of rainforests are involved, forcing orangutans to leave their settlements and relocate to other places that do not have similar resources which eventually causes the end of their lives. 27 million hectares are being used for palm oil plantations, 90% of them located in Indonesia and Borneo. Branching off of deforestation are uncontrollable forest fires that not only cause the relocation of orangutans, but kill them by the hundreds because of their slow mobility.

The Project

Goals of Project

The primary focus of this project is to find a solution to one of the biggest problems this species is facing: deforestation. Especially in Borneo and Sumatra, tropical forests are being slashed and burned, forcing many animals to relocate and leaving the incapable left to suffer. Deforestation is occurring in these areas mainly because of the increased growth in demand of palm oil. Indonesia and Borneo produce 85% of the palm oil supply of the entire world. Palm oil is used in countless products ranging from food to health products and much more. Palm oil has many benefits for humans, but sadly bring many disadvantages to orangutans. Because of high demands for palm oil from major countries, deforestation is occurring at a much rapid rate due to the increased need for land to cultivate the palm trees.

Project Design

A solution to this problem is to come up with a synthetic oil with similar properties that can be used to substitute palm oil in many products such as detergent or health care products. No such oil has ever been made before but a way that this can be implemented is by composing a group of scientists, preferably with a biochemical background, to be able to either create a different type of solution with similar properties to palm oil, or to find other types of oil that does not harm the environment during its production, and create a solution similar to palm oil. Even though it is not the palm oil that is causing problems, it is the way it's being manufactured, especially without strict regulations, that is leading to deforestation. Creating a synthetic oil similar to palm oil will almost guarantee that major deforestation won't occur to get the

resources needed. Human-friendly synthetic oil has never been created or tested in a lab, therefore this solution will take time and money. When compared to other possible solutions to saving the orangutan numbers from decreasing, creating a synthetic oil placed highest in score overall, as seen in Table 1.1. This solution had a low cost compared to the other projects listed in Table 1.1, minimal damage to other animals in the process, environmentally friendly, and very much feasible in a short time scale. This project is designed to take roughly five years to collect grants and donations, create a chemical formula for this oil, manufacture, and distribute.

Manufacturing of Project

The synthetic oil must be researched and created prior to manufacturing. The oil chemical formula would be concocted at the Harvey Mudd College, in California for the purposes of using their state of the art technology for low cost. Once a solution has been produced, it needs to be manufactured, which will be done in the U.S to create new jobs and growth in the economy as well as lower the deforestation rate in Indonesia and Borneo. The oil can be sold to other companies that produce the following items which require palm oil in the manufacturing process: lipstick, pizza dough, instant noodles, shampoo, ice cream, detergent, margarine, chocolate, cookie dough, biodiesel, soap, and packaged bread. Once these companies buy and trade for the purpose of using this oil in their products, the profits will go back into the manufacturing of the oil, companies and people that invest in this project, and to helping save orangutans from other life threatening problems. Not only are consumers benefitting from this newly synthesized oil that could be altered in the future to have more features, but it also benefits the orangutans by saving their habitat from further deforestation.

Distribution

The oil will be distributed using eco-friendly methods, such as trucks and other vehicles with the highest gas mileage per hour, which maximizes distance without compromising on any other factors such as high CO_2 emissions or increased time in delivery.

Anticipated Roadblocks

A major challenge for this project is estimating the costs and timeline because the creation of another oil has not been done. Another difficulty could be that if there is an element to the synthetic oil that is missing but is a fundamental part of the palm oil's properties. In any case, new elements can be added, but it may extend the 5-year time period further. Another roadblock would be the oil not being able to pass FDA regulations or any other standards of countries outside the United States. The oil would once again have to be modified in order to meet the criteria.

Cost

The cost of this total project, including manufacturing and distribution would be around $7,500. To have access to the lab at the Harvey Mudd College, the cost estimates around $1,000 to use their facilities per year because of their state of the art technology. Secondly, manufacturing of this product would cost a total of $1,500 for the first batch of oil, which will vary based on which ingredients will be used in the formula. Distribution would cost about $5,000.00 depending on which type of trucks would be feasible to rent out. All of the people helping with this project will either be volunteers helping with packing, distribution, and manufacturing, and biochemical scientists with enough background and qualifications to be able to develop a formula for this synthetic oil. The unit price for each liter of oil is projected to be around $4. For every 100 liters of synthetic oil being produced, an estimated 250 orangutans would be placed in a sanctuary and rehabilitated for any injuries caused by previous deforestation.

Funding

Our company cannot proceed further without donations and is asking for $8,000, which will cover the research, prototyping, and distribution for this synthetic oil. Because the cost of this research is not too expensive, funding for this will be relatively easy to acquire from other organizations as well. Organizations such as WWF and UN would be contacted immediately because deforestation and loss of habitat of endangered species is one of the biggest focus for each of the organizations. In addition, the Jane Goodall foundation can be reached out to for grants as well because of their extensive research and dedication to monkeys and apes. The

governments of Indonesia and Borneo can fund this research because their lands are being affected and this synthetic oil is an alternative to their problem. Once these donations have successfully been collected, our project will be ready to start making a positive impact on orangutans and the southeast Asian biosphere.

Project Labels	
Relocate orangutans to another area similar to their habitat and have them grow there	A
Create even more sanctuaries in Borneo and Sumatra	B
Create laws, set more governmental control, reduce corruption	C
Creating another alternative to palm oil in a lab	D

Table 1.1

Specifications	Weight (1-10)		A	B	C	D
Low Cost	9		9	27	36	36
Feasibility	6		12	24	18	30
Environmentally Friendly	10		10	50	50	50
Minimal Danger To Animals	8		8	24	32	40
Score			39	125	136	**156**

Table 1.1 shows the different criteria the different solutions were being graded upon. Solution D scored the highest compared to the other ideas in the following criteria; low cost, feasibility, environmental impact, and minimal harm towards animals.

Table 1.2

A	Cargo Boat	750,000.00	per unit
	Commercial Airplane	$1,702	per hour
	Cages	1,399.99	per unit
	Total	753,101.99	
B	Laser system	276.99	per unit
	Min. of 100 sq acres of land	119,000	per 10 acres
	Total	119,276.99	
C	Creating advertisements	250,000.00	per ad
	Social Media Outreach	1,000	
	Governmental Outreach	200,000	
	Total	451,000.00	

D	Rent or use a lab at a college	1500	1 lab
	Research	1000	

Table 1.2 shows roughly the different materials needed for each project and the cost per unit. The first column are the projects, which correlates to the project labels. The second column shows what would be needed in order to pursue that project. The third column has the price for each unit and the fourth column specifies the quantity of one unit.

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