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An Economic Analysis of Using Retired Vessels to Create Artificial Reefs in Costa Rica

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AN ECONOMIC ANALYSIS OF USING RETIRED VESSELS TO CREATE ARTIFICIAL REEFS IN COSTA RICA

By

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ABSTRACT

The Republic of Costa Rica is a Central American country with only 0.03% of the world's landmass, but 5% of the world's biodiversity, making it a leading ecotourism destination. Ecotourism is one of the main sources of revenue for the country, but the degradation of coastal reefs has resulted in a significant loss of financial income for developing areas. As a result, many of these areas are searching for methods to revert the degradation of coral reefs.

Artificial reefs play an important ecological role in marine ecosystems due to their complexity and size. They help in the development of communities of fish, corals, and other aquatic fauna, as well as positively influencing the economy of the surrounding communities by bringing in revenue. Not only will the creation of artificial reefs assist Costa Rica's conservation efforts by creating habitat for corals and game fish, but also it will improve its economic development by creating more jobs and potentially increasing the number of tourists visiting the country each year. The goal of this study was to calculate the number of anglers and/or scuba divers that need to visit Costa Rica in order to break-even on the costs of creating an artificial reef by sinking retired naval vessels, approximately $8.6 million. The analysis assumed that all funding to convert the costs of developing the artificial reef would come from the 13% sales tax revenue paid by

the additional anglers and scuba divers. The high and low seasons, high and low amenity costs, payback period, interest rates and the installment payment or capital recovery formula are several of the variables that were used to obtain the calculations in this study.

Results show that, depending on the length of stay, the sales tax revenue collected from an additional 287 to 452 anglers or 303 to 476 scuba divers each year for 20 years during the high season would pay, with interest, for the creation of the reef. To pay for it in one year, Costa Rica would need 4,488 to 7,067 additional anglers or 4,742 to 7,443 scuba divers in a single year. To pay for the cost with interest for the creation of the reef with taxes collected during the low season, and depending on the length of stay, the country would need 1,475 to 2,458 additional anglers or 1,503 to 2,505 additional scuba divers each year for 20 years. If Costa Rica wanted to pay for it in one year during the low season, they would need to attract between 23,076 to 38,460 additional anglers or 23,515 to 39,192 additional scuba divers in a single year. These results show that the creation of an artificial reef using a retired vessel has great potential in Costa Rica when comparing the results to the 283,790 anglers that visited Costa Rica in 2008.

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INTRODUCTION

The Republic of Costa Rica is a Central American country with a population of 4.9 million people (Worldometers, 2019). While this country only has approximately 0.03% of the world's landmass, it contains 5% of the world's biodiversity (Jones & Spadafora, 2017; McNall et al., 2016; Valverde Sanchez, 2018). It is home to more bird species than the entire United States and it boasts twenty separate "life zones". It consists of approximately 850 species of birds, 1,260 species of trees, 237 of mammals, and 361 of reptiles (Jones & Spadafora, 2017). Due to this biodiversity, Costa Rica is one of the most visited countries in Central America by ecotourists, who are attracted to the rich coast that offers many unique life experiences.

Ecotourism, or traveling to relatively underdeveloped natural areas to enjoy and study the scenery and wildlife, is one of the main sources of revenue for Costa Rica, followed by the production of bananas and coffee (Boo, 1990; Campbell, 1999; Honey, 2003; Jones & Spadafora, 2017). In an attempt to create a successful conservation program similar to the one the Caribbean Conservation Corporation (CCC) produced in Tortuguero National Park (TNP) protecting green sea turtles, the focus of this study is to use a retired vessel to

create an artificial reef around the coast of Papagayo, Catalinas or Bat Islands, in Costa Rica.

Even though coral reefs produce a substantial amount of money for local communities, they are currently being depleted due to many factors, including natural disasters (i.e. hurricanes, bio erosion, El Niño – Southern Oscillation), diseases, overfishing, destructive fishing techniques, coastal development, pollution, and careless tourism. Coral reefs, on a global scale, have provided an estimated US$375 billion per year on the total economic goods and services. The majority of these services come from recreation, defense services, and food production (Ammar, 2009). Many communities in developing countries depend on reef services in order to survive and make a decent living by consuming and selling the fish they catch and using the reefs as a tourist attraction. The degradation of coastal reefs means the significant loss of financial income for these developing areas, and therefore many of these areas search for other methods to slow down, make up for, or stop the degradation of coral reefs. The Status of Coral Reefs of the World Report in 2004 reported that an estimated 20% of the world's coral reefs have been destroyed and will no longer recover, and that 24% of the world's reefs were in imminent imperil of collapse due to anthropogenic pressures (Ammar, 2009).

Artificial reefs play an important ecological role in marine ecosystems due to their complexity and size; they help the development of communities of fish, corals, and other aquatic fauna, as well as positively impacting the economy of the surrounding communities (Burt et al., 2012). Several countries like The United States of America, Canada, Japan, Italy, Israel, Australia, South Africa and New Zealand have implemented artificial reefs in their coasts to help against the natural reef depletion and to improve their economic development. The placement of these artificial reefs has greatly benefitted their tourism industries and has proven to generate large sums of revenue to the communities near the artificial reefs due to the amount of ecotourists that visit these sites (Stolk et al., 2007).

In developing countries, tourism provides an especially important source of funding and social capital for conservation programs in some otherwise capital restricted areas. The implementation of an artificial reef using a retired vessel will greatly benefit for Costa Rica's economy because it will attract additional anglers and scuba divers who will in turn use the amenities offered by Costa Rica (hotel, restaurants, fishing and scuba diving boats, guides and land transportation), therefore increasing their revenue. Ecotourists prefer large objects with a themed structure as an artificial reef, such as naval ships and airplanes, rather than smaller and simpler structures such as concrete blocks or pipes. These

submerged structures have the potential to attract more ecotourists to Costa Rica for the purpose of using these relics for recreation (i.e. fishing and scuba diving etc.) (Shani et al., 2012).

The main purpose of this study is to determine if the implementation of an artificial reef using a retired naval vessel will attract additional anglers and scuba divers to Costa Rica and therefore pay for its construction and maintenance. In addition, to calculate how many additional anglers and scuba divers Costa Rica needs to attract to implement and financially sustain an artificial reef using tax revenue funds from the additional anglers and scuba divers. Not only will this artificial reef implementation improve Costa Rica's conservation methods by creating habitat for corals and game fish, but it will also improve its economic development by creating jobs and potentially increasing the number of tourists and ecotourists visiting the country.

GOAL

To calculate how many additional anglers and scuba divers need to visit Costa Rica in order to break-even on the cost of creating an artificial reef, using only the 13% revenue from sales taxes paid by the additional anglers and scuba divers who are attracted to Costa Rica by the artificial reef.

LITERATURE REVIEW

Ecotourism in Costa Rica

During the past few decades, Costa Rica has successfully promoted its tourism industry with an image of natural beauty and environmental consciousness, and has evolved into one of the most popular ecological tourism destinations in the world (Hearne & Salinas, 2002). Over the past two decades, ecotourism in Costa Rica has played a meaningful role in the country's economy, especially in low-income, rural communities (Valverde Sanchez, 2018).

Ecotourism is defined as "travelling to relatively undisturbed areas with the specific objective of studying, admiring, and enjoying the scenery and its wild plants and animals as well as any existing cultural manifestations, both past and present, found in these areas" (Boo, 1990; Horton, 2009; Valverde Sanchez, 2018). In Costa Rica, an ecotourist can observe nature, visit a volcano, go rafting, visit a coffee plantation, snorkel, scuba dive, fish, bungee jump, ride a zip line, take a jeep ride, or visit a butterfly enclosure, among other things.

Costa Rica is home to 237 different species of mammals, 65 types of birds, 1,200 kinds of orchids, more than 1,000 different species of trees, and 361 different species of reptiles and amphibians (McNall et al., 2016). More than a

quarter of Costa Rica falls under some form of protected status, leading Costa Rica to become a world–renowned ecotourism destination. Sixty percent of tourists are motivated to visit the country primarily because of its protected areas, ecotourism, and nature-based attractions, which generated 600 million dollars in 2015. Traditionally, Cost Rica had a farm-based economy, which has evolved and shifted toward greater land conservation efforts over the past decades (Valverde Sanchez, 2018).

Between the 1970s and the 2000s, Costa Rica became established as the world's leading ecotourism destination in the world. The total tourist arrivals increased from 155,000 in the 1970s, to 435,000 in the 1990s, and to approximately 1.1 million in the 2000s. Revenues generated by tourism grew from US$21 million to $1.15 billion over that period. The distinctive feature of this tourism boom was that much of it appeared to be driven by ecological interests. Beginning around 1960, a string of public and private initiatives, both domestic and international, commenced to build up the scientific ideas, organizations, and national parks that would later serve as a major impetus to ecotourism (Jones & Spadafora, 2017).

By 1987, Costa Rica had become well-known among biologists and conservationists (Jones & Spadafora, 2017). In 1997, a survey was conducted that suggested that the average foreign tourist spent approximately two-thirds of

his or her time in Costa Rica in protected areas or travelling to them. With the development of the protected areas system, Costa Rica has been promoted as an ecotourism destination with the subsequent importance of ecotourism in the country's rural economy (Valverde Sanchez, 2018). According to the Costa Rican Institute of Tourism (ICT), tourism accounts for nearly one-third of Costa Rica's revenue, outweighing three of Costa Rica's main exports: pineapple, coffee and banana (Boo, 1990; Campbell, 1999; Honey, 2003; Horton, 2009; Jones & Spadafora, 2017; Lumsdon & Swift, 1998; Valverde Sanchez, 2018). International surveys have placed Costa Rica at the top of tropical ecotourism destinations and it has been regarded as the world's prime ecotourist destination, even ahead of Kenya, Nepal, and the Galapagos Islands (Jones & Spadafora, 2017).

Tourism accounted for a 5.4% increase in Costa Rica's gross domestic product (GDP) in 2015, contributing to a total of 12.5% increase in the GDP (McNall et al., 2016; Valverde Sanchez, 2018). This generated 2.85 billion dollars and over 2.6 million tourism visits annually. The result is that tourism has become one of the fastest growing economic sectors in the country. In 1992, the United States Travel Society named Costa Rica "the number one ecotourism destination in the world," and by the year 2000, Costa Rica was receiving over approximately 1 million tourists with a population of only 4 million people (Valverde Sanchez,

2018). Tourism is a very important economic activity in terms of its contribution to the gross national product and the direct and indirect employment it provides. This is still an opportune time to develop additional tourism projects in the nation (Cuevas, 2002).

Conservation of Sea Turtles in Tortuguero National Park

Tortuguero National Park (TNP), located in the northeastern Limón Province in Costa Rica, is the nesting site of four species of sea turtles. The green (*Chelonia mydas*), leatherback (*Dermochelys coriacea*), hawksbill (*Eretmochelys imbricata*), and loggerhead (*Caretta caretta*) sea turtles use the Tortuguero beach to lay their eggs (Meletis & Harrison, 2010). On a global scale, these sea turtle species are currently listed as vulnerable, endangered, critically endangered, and data deficient on the Red List. Threats that are affecting marine turtles include fisheries bycatch (i.e. capture by anglers targeting other species), take (e.g. utilization of meat, eggs, or other turtle products), coastal development, pollution, and pathogens (Wallace et al., 2011).

From the four species, the green sea turtle is the largest nesting group on the TNP beach (Meletis & Harrison, 2010). Worldwide, the green sea turtle populations have been estimated to have declined 37-61% over the past 141 years (Seminoff, 2002; Troëng & Rankin, 2005). Tortuguero is the main nesting site for green sea turtles because it has the largest remaining rookery in the

Atlantic basin (Carr et al., 1978; Daley & Baker, 2000; Troëng & Rankin, 2005; Velez-Espino et al., 2018).

There is a long history of the use of green sea turtles in Tortuguero. Indigenous groups hunted the turtles before the arrival of Europeans (Lefever, 1992; Troëng & Rankin, 2005). Once the European sailors arrived, sea turtles were regarded as a food source and the market for sea turtle products grew during this time and became an economic commodity (Rieser, 2012; Vonhamme et al., 2014). All four species of turtles that nest in Tortuguero were being targeted but the main source of sea turtle products in local markets was the green sea turtle due to its high abundance. The harvesting of adult turtles was very damaging to the population of green sea turtles because this species takes a very long time to mature, between 25 and 50 years. Nesting turtles were slaughtered mainly for their calipee, fat and oil, which were exported to Europe and the United States to be used as the main ingredient in turtle soup and beauty products (Daley & Baker, 2000; Parsons, 1962; Vonhamme et al., 2014). Their eggs were also poached for consumption and were wrongly believed to contain aphrodisiacal and unique nutritional properties (Vonhamme et al., 2014).

The monitoring and conservation of the green sea turtle population first began in 1955 and has been conducted by the Caribbean Conservation Corporation (CCC), which was established by American herpetologist, ecologist,

and conservationist Dr. Archie Carr and based on U.S. philanthropy, since 1959. This corporation is Costa Rica's first non-governmental organization (NGO) to provide funds for the protection of the sea turtle nesting beach at Tortuguero (Cuevas, 2002; Jacobson & Lopez, 1994; Jones & Spadafora, 2017). It is also the first and oldest sea turtle conservation group in the world, and has more than 40 years of experience in national and international sea turtle conservation endeavors, protecting sea turtles through education, research, habitat protection, community outreach, networking, and advocacy. Since the mid-1980's, the CCC has promoted responsible ecotourism in TNP and continues to work in Costa Rica as well as throughout the Caribbean and in the United States (Cuevas, 2002). In the 1970's, better protections for nesting females were created when 18 miles of Tortuguero nesting beach became part of Costa Rica's first national park. Many people including park rangers, CCC researchers, and volunteers have contributed to the limitation of illegal take of females from the nesting beach (Daley & Baker, 2000).

In 1998, Costa Rica, realizing that the heaviest responsibility for the continued survival of green sea turtles rested on the country possessing the nesting habitat, increased its protection efforts. In a landmark victory in February 1999, the Constitutional Court of Costa Rica revoked the 1983 law that allowed the killing of green sea turtles. The decision was made in response to a lawsuit

brought by the CCC, numerous Costa Rican citizens and business owners and a coalition of Costa Rican conservation organizations (Cuevas, 2002; Taft, 1999). The legal ban of harvesting sea turtles was difficult for fishermen; the green turtle fishery was important to them because there was no other viable fishery from May to July. This made the fishermen organize themselves and they opted to join with turtle conservationists to find solutions for their problems (Cuevas, 2002).

Because of that victory, it is no longer legal to kill any sea turtles in Costa Rica. This has led to villagers saying that the sea turtles are more valuable to them alive than “cooked up in the stewpot.” Tourists that visit TNP pay a considerable amount of money to be able to watch the sea turtles come up on the beach and lay eggs. Approximately 50,000 tourists visit TNP annually to visit the tropical rainforests and the turtle egg-laying event (Taft, 1999). Park entrance sales represent only a very conservative estimate of the phenomenal growth rate of tourism in Tortuguero in the last thirty years, which has allowed the village to become almost 100% reliant on tourism (Meletis & Harrison, 2010). Considering the great success of the conservation project in the TNP, one of the focuses of this study will be to implement another form of conservation and ecotourism by using retired vessels to create artificial reefs around the coast of Costa Rica.

Economic Impact of Tourism in Developing Countries

There is no denying that tourism is a major global economic force (Milne & Ateljevic, 2001). Many nations promote nature-based tourism in the pursuit of the goals of nature conservation and income generation. Numerous other nations are expanding their systems of protected areas and national parks in order to protect biodiversity and other ecological services (Hearne & Salinas, 2002). While difficult to measure, ecotourism is believed to be the fastest growing tourism segment (Buckley, 1994; Campbell, 1999; Deaden & Harron, 1993; Wild, 1994). In 1988, there were between approximately 157 and 236 million international ecotourists that generated economic impacts of $93 billion to $233 billion (Campbell, 1999). In 1999, the tourism sector generated about US$3.5 trillion of gross domestic product (GDP) and about 200 million jobs, making it one of the major global economic force in the world (Milne & Ateljevic, 2001).

Faced with the problems of declining terms of trade for agricultural products and increasing regulations for manufacturers, many developing countries have turned to tourism as a possible alternative source of growth. Many of their resources have been mainly aimed towards the international tourism market and therefore devoted to the provision of airports, local transport infrastructure, and hotels. Increasing demand for “long haul” tourism has fueled supply-side improvements as air transport technology has improved and

accessibility to developing country destinations has increased. As a result, tourism has become a major economic activity within developing countries, which often generates more foreign currency than traditional primary commodity exports (Sinclair, 1998). In 2008, 922 million international tourists were recorded compared with 535 million tourists in 1995. The remarkable thing about this was that 40 percent of these tours were destined towards a developing country. In many countries, such as Australia, Belize, Brazil, Kenya, Madagascar, Mexico, South Africa, and Tanzania, biodiversity provides the primary tourism attraction (Christ et al., 2003). In 2013, total export earnings generated by international tourism reached US$ 1.4 trillion. Thus, tourism is the primary source of foreign exchange earnings for the vast majority of least developed countries (UNWTO, 2019).

Economic and Social Impacts of Costa Rica's Ecotourism Boom

Ecotourism has been promoted as a non-consumptive use of nature and as a possible win-win development strategy, especially in underdeveloped areas in Costa Rica and in other countries. Ecotourism overall should not only conserve the environment, but also help improve the welfare of local peoples. It should provide a positive generation of money in a more ecologically and socially friendly way than other forms of exploitation of land. There are environmental, economic, and social impacts that are beneficial in ecotourism. For example,

environmental impacts include the stimulation of nature preservation and environmental education, along with raising environmental consciousness. Foreign exchange, jobs, and economic diversification are positive economic impacts. Beneficial societal impacts are improved education, improved facilities, empowerment of deprived groups, encouragement of community organization, and the promotion of local culture to incoming tourists (Koens et al., 2009).

Tourism has given nature an economic value, which has prevented further deforestation and the protection of certain animal species in the Costa Rican forests. Education has also been an important concept that has been promoted to the locals and tourists of Costa Rica. In Tortuguero National Park, tourists and local children are educated on the impacts humans can have on the surrounding environment. Tourism in several areas such as Manuel Antonio and the Monteverde region have benefited from an increase in foreign exchange as a result of tourists spending money at hotels, restaurants, and at souvenirs shops. It is clear that tourism has brought more money to the local economy and that the region is very much dependent on tourism. Another major positive outcome of tourism is that it has stimulated improvements in locals' education and medical care and even women's empowerment in some regions (Koens et al., 2009). Government officials and agencies in Puerto Jiménez, Costa Rica report that 20 percent of the population there works directly in ecotourism, and the other

approximately 60 percent receive indirect ecotourism benefits. Ecotourism has surpassed gold mining, farming, and ranching as a central economic activity in Puerto Jiménez (Horton, 2009).

Ecosystem Services

Ecosystem services (ES) is “the functions and products of ecosystems that benefit humans, or yield welfare to society” (Lele et al., 2013). Humans benefit from many essential goods from natural ecosystems, both directly and indirectly (Daily et al., 2003; Lele et al., 2013). Some examples include seafood, game animals, fodder, fuelwood, timber, and pharmaceutical products. These goods are very important to everyday human life and represent important and familiar parts of the economy. Natural ecosystems perform fundamental life support services without which human civilizations would cease to thrive. In addition to providing these essential goods to humans, ecosystems also provide services that support life through the following examples (Daily et al., 2003; Holdren & Ehrlich, 1974).

- purification of air and water
- mitigation of droughts and floods
- generation and preservation of soils and renewal of soil fertility
- detoxification and decomposition of wastes
- pollination of crops and natural vegetation
- dispersal of seeds
- cycling and movement of nutrients
- control of the vast majority of potential agricultural pests
- maintenance of biodiversity
- protection of coastal shores from erosion by waves
- protection from the sun's harmful ultraviolet rays
- partial stabilization of climate
- moderation of weather extremes and their impacts
- provision of aesthetic beauty and intellectual stimulation that lift the human spirit

These are just some of the hundreds of services provided by ecosystems around the world. Ecosystem services also produce economic benefits (Daily et al., 2003; Lele et al., 2013). These services are provided by ecosystems such as forests, grasslands, oceans, swamps and rivers (Gibbons, 2015). Ecologists were traditionally suspicious of economics, but the idea that economic valuation

of ES and consequent revenue can actually strengthen and promote biodiversity conservation has offered new hope in an era of market-based thinking (Lele et al., 2013; Norgaard, 2010; Vedeld, 1994). Many of the above examples, such as fish and products that come from animals, are often traded in economic markets. A very good example of the importance of fish is the value of the total amount of fish that are caught. The annual world catch fish is estimated to be about 100 million metric tons of fish, valued at around $50 billion to $100 billion. Fish is the leading source of protein in some countries, especially in Asia and Africa, making it a very important ecosystem good (Daily et al., 2003).

Another example of the importance of ecosystem services is grasslands. Grasslands are an important source of marketable goods, including the animals that are used for labor (horses, mules, asses, camels, bullocks, etc.) and those that are used for their consumable parts or products (wool, milk, leather, and meat). Looking closely into the services of ecosystems towards humans, natural ecosystems produce vegetation that is consumed by humans. A variety of tree species produce mushrooms, fruits, nuts, honey, spices and other foods. These systems also produce timber, fuelwood, fiber, pharmaceuticals, and industrial products. Wood is used for the construction of buildings, homes, furniture, paper, cloth, thatching, and rope.

The importance of ecosystem services is immense. Humans on a regular basis utilize the products that are produced by ecosystems and have a deep appreciation for them (Daily et al., 2003; Gibbons, 2015). This can be seen in art, religion, and traditions of different cultures, as well as other activities like gardening, nature photography, filmmaking, bird feeding/watching, hiking, camping, mountaineering, river-rafting/boating, fishing, hunting, and several other activities (Daily et al., 2003; de Groot et al., 2002; Gibbons, 2015).

One of the activities that stands out is ecotourism, which is a type of ecosystem service that is enjoyed by many people worldwide. For many individuals, the environment is an unparalleled source of wonder and inspiration, peace and beauty that fulfills and rejuvenates one's being. The economy depends greatly on the services that are provided free of charge by ecosystems. The annual worth that ecosystem services supply are many trillions of dollars (Daily et al., 2003).

Another major ecosystem service comes from coral reefs, which generate nearly $400 billion in economic goods to millions of people every year. Coral reefs provide four main services to humans: tourism and recreation, medicine, coastal protection, and food and fishing. Coral reefs attract millions of tourists every year, which brings important income to the surrounding communities. Countries with coral reef industries derive more than approximately half of their

gross national product from coral reefs (Coral Reef Alliance, 2020). In the medical aspect, coral reef species provide new medical compounds and technology to treat serious diseases. More than half of all new cancer drug research focuses on marine organisms. Coral reefs also provide coastal protection; they act as natural wave barriers that protect coastal communities and beaches from storm damage. In addition, coral reefs sustain the fish and shellfish populations that provide protein for one billion people around the world. They are nurseries for many commercially valuable species as well (Jaksic et al., 2013).

Natural Coral Reef Status

With all of the climate changes that the world has been experiencing in recent decades, it comes to no surprise that many environments are being negatively affected. For example, hurricanes have a detrimental impact on estuarine and coastal habitats, which numerous wildlife species inhabit. Another major concern that affects many marine species is the depletion of natural coral reefs. Natural coral reefs are endangered due to several impacts induced by both nature and humans. Some of the factors that contribute to the endangerment of natural coral reefs are hurricanes, diseases, overcrowding of tourists (i.e., scuba diving, etc.), coastal development, pollution and overfishing. Coral reefs occupy less than one percent of the ocean floor, yet are the home to more than a quarter of all marine species.

Both sediments and El Niño warming events during the last 30 years have gravely affected coral reefs in Costa Rica. However, due to limited resources, the government of Costa Rica has had trouble with proper reef management and conservation as well as the proper outreach to the people that use the reefs and to the general public (Cortés et al., 2010).

The History of Artificial Reefs

Artificial reefs are one or more objects of human or natural origin that are deployed with the purpose to influence biological, physical, or socioeconomic processes related to living marine resources. They have been around as long as people have been placing objects in the water and have been used for centuries to help with the attraction of fish assemblages for the fishing industry. This was not the only purpose of these reefs in the past. The Greek philosopher, geographer, and historian Strabo documented that the ancient kingdoms of Persia built reefs that ran across the mouth of the Tigris River to prevent the passage of foraying naval pirates from India. Polybius, a Greek historian during the Hellenistic period approximately 200 years before Strabo, wrote that the Romans constructed a reef across the mouth of the Carthaginian harbor of Lilybaeum in Sicily during the First Punic War to corner the enemy ships within and help in driving the Carthaginians from the island. These methods were common naval strategies during those times.

Other documented reef implementations include the log huts that were submerged off the coast of South Carolina in the 1830s to improve fishing. This was the first documented artificial reef in the United States. Artificial reefs have historically been used for the enhancement of commercial fishing, but in more modern times the implementation of artificial reefs has diversified. The placement of structures underwater to provide a habitat is done for numerous other reasons such as scuba diving, snorkeling, commercial and recreational fishing, aquaculture, environmental restoration, natural resource management, and scientific research (Hess et al., 2001; Williams, 2006).

The Ecosystem of an Artificial Reef

When implementing an artificial reef it is very important to fully understand the functions of the artificial reef ecosystem versus the natural reef ecosystem. When an artificial reef is deployed, aquatic flora and fauna (microorganisms, filter feeders, invertebrates, crustaceans, feeder fish, grazers and predators) rapidly colonize it (Stolk et al., 2007; Williams, 2006). These organisms, which are members of the food web, congregate, supplying the necessary elements to sustain the ecosystem. Grazers and predators (sharks, rays, skates, jacks, etc.) quickly move in and establish themselves around the artificial reef, thus creating a desirable site that anglers and recreationists like to visit. These predators give the opportunity to increase the diversity found in the area around the artificial

reef. Many game species use coral reefs for breeding, feeding and habitat purposes and are the species most sought after by anglers (Williams, 2006).

Artificial Reefs and their Environmental Benefits

When artificial reefs are introduced in the sea, fish and other organisms rapidly populate them. Therefore, artificial reefs are a major tool for enhancing aquatic ecosystems, providing shelter for the fish and stable areas for the development of encrusting communities, which in turn contribute to the diet of many species (Shani et al., 2012). A study conducted by Burt et al. concluded that large-scale manmade structures are likely to serve a far more important role in the ecology of marine systems in the Gulf than small structures. Such structures provide a substantial amount of complex hard-bottom habitat upon which aquatic fauna communities develop. Currently, artificial reefs are created for a number of reasons, including habitat conservation, environmental restoration, and natural resource management and rehabilitation (Burt et al., 2012).

Artificial Reefs and their Economic Benefits

There are many uses for artificial reefs. Some examples of these uses include the increase of recreation and commercial fishing production, recreational skin and scuba diving sites, habitat protection, conservation of biodiversity, and research (Williams, 2006). The growing pressure on marine resources due to the presence of scuba divers calls for the formulation of strategies to divert divers from the vulnerable natural reefs. One way to achieve this goal is to create underwater artificial reefs.

Artificial reefs have proven in past studies to have positive effects on the biodiversity of fish species and marine plants, as well as having beneficial economic impacts (Shani et al., 2012). Recreational anglers, divers and other groups use artificial reefs, and the existence and use of artificial reefs set in motion a variety of economic activities that result in significant economic benefits (i.e., expenditures, incomes, jobs) to the coastal communities in close proximity to the reefs (Adams et al., 2006). Artificial reefs that are used for submarine and dive tours receive less fishing pressure from the public because the high use patterns by dive tour firms preclude much of the fishing activity. Artificial reefs that are used for activities such as tours provide a greater economic return than when used for commercial fishing purposes (Brock, 1994). Some examples include the USS Oriskany and the USNS Vandenberg, which were submerged in

Florida, and have proved to be very beneficial to the aquatic life as well as to the neighboring communities in terms of increased revenue from recreationists visiting the reef (Huth et al., 2014).

The creation of an artificial reef can be very costly and can range from $46,000 to $2 million, depending on the size (Hess et al., 2001; Jaksic et al., 2013; L.H. Pendleton, 2005). These expenses represent a direct cash outflow from cities, provinces, countries, and non-profit organizations and are considered great investments for the local economy. For local governments, converting ships into artificial reefs presents a very good opportunity to enhance the development of tourism and raise local tax revenue (Jaksic et al., 2013). Examples of current managed artificial reefs can be found in the United States, Canada, Japan, Italy, Israel, Australia, South Africa, and New Zealand. These countries have reported positive results in the restoration of coral and other saltwater species as well as positive economic development (Stolk et al., 2007).

Artificial Reefs as Recreational Scuba Diving Resources

Recreational fishing and diving, environmental restoration, natural resource management, and scientific experimentation are now common motivations behind artificial reef implementations. Artificial reefs are a growing phenomenon within the diving and ecotourism community (Arena, 2011). Scuba diving in artificial reefs generates market impacts that help to sustain local

economies and provide new tax revenues in areas where scuba diving tourism attracts out of town visitors (Linwood H Pendleton, 2004). There are between 2.7 to 3.5 million active scuba divers in the United States and as many as 6 million active scuba divers worldwide (DEMA, 2019). Scuba diving has been a growing pastime for many people around the world and the majority of those divers prefer to dive around large submerged structures.

In a study conducted in Eilat, Israel, divers that were surveyed expressed their preference for large objects with a themed structure as artificial reefs, such as naval ships and airplanes, rather than more generic and shapeless forms, such as concrete blocks or pipes (Shani et al., 2012). Stolk et al. explains that divers like to dive at these sites because of the experiences provided by exploring these themed structures. These experiences are greatly valued by divers, and the positive feedback and demand for more artificial reef sites are some of the factors that have contributed to the growing interest in the implementation of artificial reefs around the world.

Even though fishing is a much larger and more popular industry than scuba diving, diving is a major contributor to an increasing number of communities' economies. This is due to the reputation of scuba diving as ecologically sustainable, unlike consumptive recreational activities such as fishing. Stolk et al. implies that scuba diving is labeled as a marine ecotourism

activity because diving is based on nature, can provide environmental education opportunities, and is sustainably managed. Activities other than scuba diving that are enjoyed by marine tourists and take place around artificial reefs are fishing, swimming, snorkeling, surfing, kayaking, boating, submarine trips, and observatory tours. All of these activities are good examples of the benefits that artificial reefs can provide to marine ecotourists.

The Texas Parks and Wildlife Department

Texas Parks and Wildlife Department (TPWD) surveyed recreational divers to determine preferences in artificial reef environments. According to this survey, 72% of people wanted there to be 'more funds to deploy large naval ships as reefs'. Participants were also asked to indicate the one reef building material that they preferred for future implementation; 68.4% clearly preferred large naval ships over all other materials. Ditton and Baker (1999) conducted a study that found that divers would dive more often if TPWD sank a large naval vessel where they went diving. Hynes et al. (2004) suggested that the demand for reefing large ships around the U.S. mid- and southern- Atlantic and Gulf Coasts is strong, with approximately 400 sites looking to receive ships to implement them as artificial reefs (Stolk et al., 2007).

Ships as Artificial Reefs

Ships, planes and other large structures are finding their way to the bottom of the sea along the coasts of North America, Europe, and Australia. Ships have been sinking at sea due to wrecking on reefs and other incidents since ancient sailors began navigating the seas (Williams, 2006). In the United States, the earliest record of intentionally sinking vessels for artificial reef fishing is 1935, when four vessels were sunk by the Cape May Wildwood Party Boat Association (Lukens & Selberg, 2004). More and more coastal communities are turning to these sunken structures as a means of protecting their natural reefs.

Artificial reefs create habitats for fish and other types of sea life and work as destinations for recreational fishing and scuba diving tourists around the world (Oh et al., 2008; Linwood H Pendleton, 2004). Ships as artificial reefs have become more popular in the tourism sector for the past several decades. In 1994, the Atlantic States Marine Fisheries Commission (ASMFC) reported that about 666 steel-hulled vessels had been implemented for reefs in the United States. Currently, there are approximately 350 Navy and Maritime Administration (MARAD) decommissioned ships that are in need of disposal. Navy vessels are inspected and reclassified periodically to determine if the ship still meets environmental requirements.

In 2000, the United States Navy asked the RAND Corporation to investigate several ways to dispose of decommissioned ships. Four options were studied; (1) Indefinite storage or the “do nothing” policy, (2) using the ships to construct artificial reefs, (3) domestic recycling, and (4) overseas recycling. Out of the four, RAND concluded that using ships as artificial reefs was the best choice because it cost much less than indefinitely storing the ships or scrapping them (Hynes et al., 2004). The Navy and MARAD also should not opt for overseas recycling because such a program would involve many impediments and difficulties. Neither should they opt for long-term storage because this would entail high and uncertain costs and would only defer, rather than solve, the problem of disposing of retired vessels (Hess et al., 2001). Using these ships as artificial reefs, in fact, over the years, would return more tax money to state and federal governments than the cost to prepare and place the ships as reefs. Hynes, Peters, and Rushworth (2004) reiterated that using ships as artificial reefs had potential benefits for helping to restore natural reefs and also mentioned that surrounding communities might be willing to share the sinking process costs due to the fiscal benefits of the artificial reefs.

Preference of Vessels as Artificial Reefs

Betz (1994) reported that respondents who took a mail-in survey preferred ships to be used as artificial reefs instead of other material or structures. Sport divers, in particular, showed more preference for sunken vessels due to the high densities of fishes at the sites and the aesthetic qualities offered by the ship itself. Arena (2011) further explained that the demand for sunken vessels will greatly increase as a result of the growing sport diving industry, which has reported 50,000 new worldwide diving certifications each year since the 1980s.

A study conducted by Arena examined diurnal and nocturnal assemblages on newly deployed and preexisting vessels and concluded that statistically, there was a higher abundance of economically important species on sunken vessels than on natural reefs. If the sunken vessels are placed in Marine Protected Areas (MPAs), the survivability of assemblages of overexploited fish should increase. This is important due to the many economically important fish species. If the sunken vessels are protected, they will provide a great opportunity for ecotourism, which has already been shown in Hawaii and Australia. Many of those protected artificial reefs are rated among the best dive sites in the world and also have the spillover effect of enhancing local fisheries. Without these artificial reefs being protected, the economically important species of fish would be depleted and would be more vulnerable to fishing pressures (Arena, 2011).

Three examples of sunken ships that have been very successful in the United States have been the ex-USS Oriskany, an Essex Class aircraft carrier, the ex-USS Spiegel Grove, a retired Thomaston- class dock landing ship, and the USS Vandenberg, a 520-ft decommissioned U.S. Air Force missile tracking ship which was also a WWI U.S. Army troop transport ship. These three ships have proven that ships can be used as artificial reefs successfully and can provide a great amount of economic income to the community, city, or state in which these ships were implemented, as well as reducing the user-pressure on natural reefs (Huth et al., 2014).

Artificial Reefs in Florida

The concept of artificial reefs as a scuba diving attraction was developed in Florida (Jaksic et al., 2013). Reportedly, Florida has the most permitted artificial reefs in the nation (Adams et al., 2006). The main goal was to promote aquaculture, with the popularization of scuba diving attractions being the secondary effect. Wreck diving is scuba diving on artificial reefs that are based on shipwrecks. Most of the sunken ships are along the coast of Florida (380), New Jersey (129), southern California (100), and New York (65) (Jaksic et al., 2013). There are approximately 2,700 artificial reef deployments located off 34 coastal counties in Florida (Adams et al., 2006). Three of the most popular

fishing and scuba diving artificial reefs in Florida are the aforementioned USS Spiegel Grove, USS Oriskany and the USS Vandenberg.

USNS General Hoyt S. Vandenberg (T-AGM-10)

On May 27, 2009, the USS Vandenberg was sunk in Key West, Florida in the Florida Keys National Marine Sanctuary. Both the State of Florida and the Monroe County governments invested in the sinking of the USS Vandenberg to boost both economic development and tourism in the area. The total costs for sinking the USS Vandenberg were $8.6 million (Adams et al., 2006; NOAA, n.d.) The State of Florida invested $2.8 million and Monroe County invested $4.3 million, for a total amount of $7.1 million. The rest of the money came from the U.S. Maritime Administration, which invested $1.25 million and the rest of $0.25 million came from private sources. The Vandenberg generated an annual increase in state and local tax revenues of approximately $618 thousand, about $379 thousand in state sales tax revenue, and almost $240 thousand at the local level on sales and lodging tax revenue (NOAA, n.d.). Following the sinking of the Vandenberg, the local dive-related business increased by almost 190 percent. This resulted in an increase of $6.5 million in dive trip related expenditures, while annual state and local sales and lodging tax revenues increased by approximately $620,000. An additional 105 jobs, with $3.2 million in incomes,

were generated by the deployment of the Vandenberg as an artificial reef (Adams et al., 2006).

USS Oriskany (CV-34)

On May 17, 2006, the ex-USS Oriskany, an Essex Class aircraft carrier, was sunk off the coast of Pensacola, Florida (Adams et al., 2006; Leeworthy et al., 2006). The primary purpose of the deployment was to enhance the coastal economic activity associated with the recreational dive industry located in the Baldwin County (Alabama) and Escambia County (Florida) regions (Adams et al., 2006). With a length of 911 ft., the Oriskany became the largest artificial reef in the world at a depth of 80 ft. to 212 ft. The sinking of the ex-USS Oriskany was the completion of a two-year long effort by several individuals, institutions, and organizations. Morgan et al. (2009) documented the Oriskany diver user value in 2006 and estimated it to be approximately $2.3 million annually. Another study conducted by Morgan (2008) estimated the economic impact to be approximately $3.6 million for an overall Oriskany annual economic contribution of $5.2 million (Huth et al., 2014). Dive activities originating from Baldwin and Escambia Counties resulted in dive trip related expenditures of $2.2 million, with an economic impact of $3.6 million, the creation of 67 jobs, and the generation of $1.4 million in local incomes (Adams et al., 2006).

USS Spiegel Grove (LSD-32)

On June 10, 2002, the ex-USS Spiegel Grove, a Thomaston-class dock landing ship, was sunk in the waters off of Key Largo in southern Florida and within the Florida Keys National Marine Sanctuary. The primary objective of this particular project was for resource management. At 510 feet, the Spiegel Grove was, at the time, the largest vessel ever to be intentionally sunk for the purpose of creating an artificial reef. From pre- to post- Spiegel Grove deployment period, there was a 13.7% decrease in the total number of users (scuba divers, snorkelers, and others) on the surrounding natural reefs. The share of recreational scuba diving occurring on natural reefs decreased by 12.7%, or 17,834 dives, compared to a 118.1% increase, or 34,100 dives, in the share of recreational scuba diving occurring on artificial reefs. The net changes in total recreational expenditures from the pre- to the post-deployment period show that there was an increase of $2.6 million in total recreational expenditures, which generated a total impact on sales/output of $2.7 million, $961.8 thousand in local income, and the creation of 68 new jobs (Adams et al., 2006; Leeworthy et al., 2006). The deployment of the Spiegel Grove was considered a win-win situation for both the natural reef environment and the local economy (Adams et al., 2006).

Coral Reef Status in Costa Rica

Costa Rica has coral reefs on both the Caribbean and Pacific coasts. The Caribbean coast is 212 kilometers long and is made up of sandy beaches and forms carbonate promontories in the southern section. There are three well-known areas that have coral reefs on the Caribbean coast of Costa Rica. The first location is between Moín and Limón, the second is located at Cahuita National Park, and the third is located between Puerto Viejo and Punta Mona. Most of the touristic activities along the Caribbean coast take place in the southern part of the area. The Pacific coast is 1,160 kilometers long and has a number of diverse habitats. It consists of rocky shores, sandy beaches, mangrove forests, estuaries, a tropical fjord islands, and several gulfs and bays. Coral reef communities can also be found on the Pacific Coast of Costa Rica, which has been divided in eight regions. The regions are Santa Elena, Bahía Culebra, Península de Nicoya, Pacífico Central, Península de Osa, Golfo Dulce, Isla de Caño, and Isla de Coco.

The Caribbean Coast

On the Caribbean side, in Moín-Limón, reefs are susceptible to heavy wave impact. This particular area is exposed to freshwater runoff, sewage, petroleum pollution, and also solid wastes from the main ports on the Caribbean. The submerged carbonate platform is covered with algae, hydroids, sponges and

isolated corals. In 1983, the corals that were the most dominant were *P. astreoides* and *A. agaricites* forma *purpurea.* In Cahuita, the largest fringing reef on the Caribbean side can be found at Parque Nacional Cahuita. Parch reefs are also found inside the lagoon and carbonate banks offshore. The coral reef found at Cahuita has been degrading rapidly for approximately 40 years due to siltation, anthropogenic impacts, and natural causes, with natural causes being massive death of organisms, earthquakes, and warming events. The coral reef in that area has decreased from 40% in the early 1980's to 10% in the early 1990's and to 2-3% in the late 1990's.

In Puerto Viejo-Punta Mona, the reefs around Puerto Viejo are mostly dead due to siltation, coral extraction for curio-trade, sewage and solid wastes. In 1983, Punta Cocles had 5% of live coral cover but over the next few years, it began to increase. In 1988, the live coral cover was 12.7 ± 5% while in 1995 it was 13.2 ± 3.6%. The presence of coral has continued to grow and was up to 16% by 2002. This increase may have been due to the protection of natural and anthropogenic damage of the reef; it is also a distance away from any sediment and the locals take it upon themselves to protect it because they consider it part of their homes. In summary, the main threats on the Caribbean coast of Costa Rica are siltation, pollution, and tourism.

The Pacific Coast

Bahía Salinas has large coral communities of several different species of coral. On the Pacific coast of Costa Rica over on the North and South sides of the Península of Santa Elena, coral reef communities grew in densities as high as 95.2% through the 1990s, but now can be found in low densities. The coral reefs in Bahía Culebra have suffered impacts from natural and anthropogenic events; many of the coral species that were once found in this area are now rare due to the extraction for aquarium trade. Culebra also had rare and distinctive coral communities that suffered damage from El Niño in 1997/98 but are currently on the road to recovery. Since 2003, another menace that has proven deadly to the coral communities in this area is green algae; it has been spreading aggressively, smothering and killing corals. Thick mats 7 to 15 meters high of algae cover the coral communities, causing them to bleach and eventually die. From 1995, live coral cover decreased in Bahía Culebra from 42.7 ± 20.8% to 12.6 ± 4.9% due to the invasion of the green algae. The coral communities continue to dwindle until the present day.

The Península de Nicoya has coral reefs that are exposed to strong wave action that may prohibit the development of coral communities. However, there are some areas that are protected from the power of the southwest swells and allow for some reef growth. There have also been some observations of

octocorals, which grow on rocky outcrops, around the islands near the Península de Nicoya, around Cabo Blanco, and near the Islas Negritos. Islas Negritos in particular has an abundance of octocoral, and freshwater runoff is the main culprit that affects coral mortality in this area.

In Pacífico Central, there are sections of reef communities that have been dying due to El Niño events that occurred during the 1990's. Coral communities were greatly affected during the event that occurred in 1991-1992; more than 57% of live coral colonies found in Parque Nacional Manuel Antonio, Punta Cambutal, and Parque Marino Ballena were bleached (C. Jiménez & Cortés, 2001). Although a slow recovery has been observed in the area, species that are less resistant to sedimentation have been noticeably absent. The freshwater lens that is between Parque Nacional Marino Ballena and Península de Osa is the main inhibitor of coral growth in the area.

There are several types of coral communities that can be found around the Gulfo Dulce; they are divided into the inner and outer sections. The high diversity coral in the inner section consists of both live and dead coral of several different species. Live coral cover only ranged from 1% to 8% in 1987 in the inner area compared to relatively high live coral cover, from 29 to 46%, in the outer area.

Isla del Caño, which is located 15 kilometers from Península de Osa, had five coral reef flats formed from dead pocilloporid corals that were covered by crustose coralline algae. The shallow sections of the reef were shaped by physical factors that include wave action, temperature and salinity fluctuations, and low tide expose. However, similar to the other reefs located on the Pacific coast, this area was negatively impacted by El Niño events in 1982-1983. During this event, these reefs lost up to 50% live reef cover followed by phytoplankton blooms that killed pocilloporid reefs.

During 1997 through 1998, El Niño events once again caused extensive bleaching and reef mortality. Between 1992 and 1996, the live coral coverage decreased from 30 to 24% and the dead coral was the dead substrate category. Finally, Isla del Coco had the highest number of zooxanthellate corals on the Pacific coast of Costa Rica and also had the highest number of azooxanthellate corals. Most of the coral died during the 1982-1983 El Niño event; in 1987 the live coral cover was between 2.6 and 3.5%. In 2002, some dominant coral species were observed to be bio eroded. Live coral cover seemed to have increased to 23% and there was also a new species of coral present, one that was not previously in the area. The current main threats on the Pacific coast of Costa Rica are siltation, extraction of reef organisms, tourism, and pollution (Cortés et al., 2010). The decline in species richness of coral reef environments

are due to habitat loss and damage that are mostly attributed to anthropogenic impacts and pollution in Costa Rica (Guzman, 1991).

Policy Making in Costa Rica

The Government of Costa Rica is a stable and notably democratic community characterized by free and fair elections and a strong respect for civil liberties (Miller, 2006). Costa Rica's Biodiversity Law of 1998 is one of the most comprehensive efforts to enact the recommendations of the Convention on Biological Diversity (Dutfield, 2004; Miller, 2006). The law openly defines biodiversity to include the great variety of ecosystems, organisms, and genetic material found in Cost Rica (Miller, 2006). Another act that is very important in Costa Rica is The Law of Conservation of Wildlife No. 7317, which aims to preserve, protect, and control the wildlife species of Costa Rica (Cortés et al., 2010; SINAC, 2019). Guidelines of this act restrict the removal or disruption of any plant, the attempt to engage or remove any animal from their habitat, along with feeding any animal.

The Costa Rican government does not have any policies specifically regarding coral reefs and activities around them. What Costa Rica does have are laws that regulate the activities in the broader coastal zone, which include pollution, fisheries, wildlife protection, and biodiversity use and conservation. These activities affect coral reefs indirectly, which is one of the policy problems

present in Costa Rica. The second problem is that a different institution of government enforces each aforementioned activity, which results in a lack of enforcement, institutional overlap, and negligence. The only part of the Costa Rican government that protects coral reefs is the Ministerio de Ambiente y Energía (MINAE, Ministry of the Environment) through its agency Sistema Nacional de Áreas de Conservación (SINAC, National System of Conservation Areas). An official order was drafted and submitted in 2005 that banned the extraction of corals and other reef organisms in Costa Rican waters, but it has not been signed and enacted. If this order is signed, coral and numerous other reef organisms could only be collected for scientific research (Cortés et al., 2010).

Artificial Reef Projects in Costa Rica

Several artificial reef projects in Costa Rica have been implemented in order to battle the rapid decline of natural reefs. The first artificial reef project in Costa Rica began in the 1980's. Used tires were used as artificial reefs but that soon proved to be a failure because the tires became loose over time and could not be held together long term. The Costa Rican reef coverage decreased from 90% to approximately 5% during the 1980's. The need to provide areas for new corals to thrive has become a very important matter for the Costa Rican government and artificial reefs have become the ideal project to address the

need for reef conservation. The Curu Artificial Reef Project, The Group ICE Artificial Reef Project, Condo Fish: The Playa Hermosa Artificial Reef Project, The Paquera Students Artificial Reef Project, and the 1984 Nicoya Used-Tire Artificial Reef Project are some of the existing artificial reef projects that are in Costa Rica (Paylado, 2020).

The Curu Artificial Reef Project

The Curu Artificial Reef Project, created in the 1980s, is one of the first artificial reef projects in Costa Rica in which over 6,000 used car tires and two wooden boats were deployed to the bottom of Curu Bay. In the late 1990s, additional plastic structures were submerged and continue to be maintained. This project continues to be active to the present day (Turismo Curu, 2020).

The Grupo ICE Artificial Reef Project

This artificial reef project remains in the research stage. The main components of this artificial reef are porcelain insulators that are joined to one another to create a small cylindrical shape. These cylinders can be attached to each other and expanded in to a larger module. This project has been deployed in Playa Hermosa in Guanacaste and has been showing promising data for its efficiency (Costa Rica - Scuba.com, 2020).

Condo Fish: The Playa Hermosa Artificial Reef Project

This artificial reef project, nicknamed the Fish Condominiums, uses cinder blocks piled underwater to form an igloo shape. Based on monitoring reports, these structures are functioning well as fish and plants are adapting to their new home and several fish species have already started reproducing in the area. Future plans for this project involve a structural steel frame where cinder boxes are easily inserted, thereby minimizing the construction labor intensity (Paylado, 2020).

The Paquera Students Artificial Reef Project

This project was a school project of several young men and was sponsored by the Costa Rica – United States Foundation (CRUSA) and the Universidad Nacional. This project allowed the students to make 90 units of artificial reefs inspired by the design made by Reefball. The school project was designed to counteract the deterioration of marine environment by providing artificial substance for corals to grow and to also generate information for future studies (Paylado, 2020).

The 1984 Nicoya Used – Tire Artificial Reef Project

In April 1984, there was another massive project to convert used tires into artificial reefs. This artificial reef was deployed into the Gulf of Nicoya, which is

one of the most important fishing centers in Costa Rica. The project continues to conduct research in the effectiveness of used tires used as the base for this artificial reef (Paylado, 2020).

The Economic Benefits of Sport Fishing in Costa Rica

The Instituto de Investigaciones en Ciencias Económicas signed an agreement in 2008 with the University of Costa Rica (UCR) and the Billfish Foundation (TBF), which are both interested in the conservation of Costa Rica marine life, to conduct a study on the economic contribution of marine sport and commercial fishing, especially of billfish, to Costa Rica. The Billfish Foundation is a U.S. based nonprofit that works worldwide to advance the conservation of billfish and associated species in order to improve the health of oceans and economies. The University of Costa Rica has the mission to promote the conservation and sustainable development of the country's natural resources, including marine species.

Recreational fishing by foreign tourists in Costa Rica has an effect on private consumption and national investment. Anglers generate foreign currency through their expenditures, but also through their effect on gross formation of capital through their payments to businesses, hotels, restaurants and others. Thus, anglers' provision of foreign income enhances Costa Rica's Gross Domestic Product. The data generated in this study provided great insight into

the importance of sport fishing, both ecologically and economically, to Costa Rica. A comparison of the effects removing commercial fishing versus removing sport fishing for select species on Costa Rica's Gross Domestic Product (GDP) was made. It was concluded that the positive impact of sport fishing was higher than that of commercial fishing, in 2008 sport fishing generated approximately US$599.1 million, while commercial fishing provided US$527.8 million.

For investment, (gross capital formation), sport fishing contributed approximately US$279 million, while commercial fishing contributed US$16.6 million in 2008. The main reason for the significant difference between the two is that anglers are willing to spend thousands of dollars to catch a fish while commercial fishers try to use the most cost-efficient methods possible. Averaging the overall tax burden of 13%, for Costa Rica it was concluded that sport fishing generated US$77.8 million in tax revenues for the country, while commercial fishing contributed US$68.6 million (M. A. S. Jiménez, 2010).

Another very important aspect that was reported in this study was the number of jobs that each of these activities provide for Costa Ricans. In 2008, sport fishing provided 63,000 jobs and commercial fisheries provided 57,000 total jobs. Not only does sport fishing produce a higher revenue than commercial fishing, it also provides more jobs. Furthermore, when the two major airports Juan Santamaría and Liberia were surveyed in Costa Rica, it was found that

283,790 people had visited Costa Rica in 2008. The total foreign currency income for Costa Rica in 2008 was approximately US$467 million. When that US$467 million is broken down, US$138 million were expenses and investment (boats, fuel, repairs and maintenance, crews, insurance, taxes, accessories and furniture) and US$329 million was spent on travel, including lodging (US$119 million), restaurants (US$15.6 million), flights and fishing guides (US$88 million), land transportation (US$6 million) and other travel expenses. It was also estimated that approximately US$105 million were spent outside Costa Rica prior to airfare or other travel expenses, but this particular data was not included in these economic analyses (M. A. S. Jiménez, 2010).

The Economic Benefits of Scuba Diving and Snorkeling in Costa Rica

Scuba diving and snorkeling in coastal and marine waters generate value for both participants and the local businesses that support these activities. A perfect example of this is California. California ranks second only to Florida in the number of participants in coastal recreation, with approximately 17.6 million participants. Pendleton and Rooke (2006) conducted a study in which it was estimated that the range of annual expenditures from scuba diving in California could have ranged from $138 million to $276 million in the year 2000. The same study estimated that the annual expenditures of snorkeling in California could have ranged from $153 million to $344 million in the year 2000. This study

provides good insight of how these coastal recreational activities can provide economic return to the state or community in which it is implemented. As diving and snorkeling increase in popularity, these values will likely also increase (Linwood H Pendleton & Rooke, 2006).

Artificial Reef Implementation Process

The ships are altered to meet environmental and safety standards before they are submerged. Ships contain many parts and hazardous chemicals that can affect the water and marine life around them. The chemicals, such as fuel, lubricants, and PCBs, would do more damage than good upon the implementation of the ship and have to be removed. Other things that pose safety hazards are removed, including overhead cableways, pipes, and ducts. Additionally, doors are removed or welded shut so divers will not be injured or trapped (Hynes et al., 2004).

Location:

There are several steps that need to be taken in order to safely and successfully create an artificial reef using a retired vessel. The first and most important step is choosing the site to where the reef will be placed. Creating a successful artificial reef requires more than just randomly placing structures in the ocean or any other aquatic environments. Long-term planning and monitoring are necessary components for these types of projects; poor planning may cause

substantial damage to natural habitats and can also lead to the overfishing of game fish. The placement of an artificial reef should not cause any negative impacts to existing marine habitats and resources (i.e. existing coral reefs, aquatic grasses, oyster reefs, scallop, mussel, or clam beds, or habitats of Endangered Species Act listed species and species of state and local concern). The placement of a vessel to create an artificial reef should provide several of the following services:

- Facilitate access and use by recreational anglers and scuba divers.
- Be consistent with national and international law fishing laws and not create an obstruction to navigation.
- Conform to any local, state, or federal requirements or policies for artificial reefs.
- Minimize the potential for environmental risks related to site location.
- Be based on scientific information.

Exclusion areas where artificial reef projects should not be placed in are the following:

- Shipping lanes
- Restricted military areas
- Areas with poor water quality
- Unstable bottoms

- Areas with extreme currents, or high wave energy
- Designated areas as habitat areas of particular concern or special aquatic sites

The composition and the geography of the artificial reef site will affect the stability and longevity of the reef and should be carefully evaluated in the siting process. In the majority of cases, soft sediments like clays, silts, and loosely packed sands should be avoided. If these are not avoided, artificial reef materials may sink into and be covered by these sediments. Project managers should evaluate vessel to reef projects and potential sites with regard to chemical and biological conditions as well as long-term durability and stability, as these will affect future habitat value (U.S. Environmental Protection Agency & U.S. Maritime Administration, 2006).

Cleaning:

Oil and Fuels:

Oils and fuels, such as crude oil, diesel fuel, gasoline, and kerosene, and their bunkers should be removed from the vessel before sinking. In addition, non-petroleum oils, wood derivative oils, animal fats and oil, and edible and inedible oils from plants should also be removed.

Petroleum and non-petroleum-based oils can have immediate and long-term effects on the environment and can be dangerous or even deadly to wildlife. They pose the risk of fire and high toxic exposure to the surrounding environment. Oil spills can harm the environment by impacting the habitat of wildlife and the toxicity of the oil can poison exposed organisms. As these processes occur, the oil can threaten natural resources, including birds and mammals, as well as a wide range of marine organisms linked in a complex food web.

In general, all liquid fuels, oils, and semi-solids need to be drained, flushed, and cleaned from fuel, fluid, and lube system equipment so that no visible sheen remains on the tanks or any other structures associated with these systems. Throughout vessel preparation, an economical way of managing used oil is to recycle it. Fuel and oil tanks, structural and non-structural tanks, gauges and gauge lines, combustion engines, non-combustion engines, shafting, gearing and stern seals, steering gear, auxiliary machinery, hydraulics, grease, bilge areas, decks and floor coverings, and bulkheads and deckheads should all be cleaned, drained and flushed. No fuel or oil residue should be left behind because this could damage the marine life and surrounding environment (U.S. Environmental Protection Agency & U.S. Maritime Administration, 2006).

Asbestos:

Asbestos is a group of minerals that occur naturally as masses of long silky fibers. The three main types of asbestos fibers are chrysotile (white asbestos), amosite (brown asbestos), and crocidolite fibers (blue asbestos). Asbestos is resistant to abrasion and corrosion, inert to acid and alkaline solutions, and stable at high temperatures. The environmental impacts caused by asbestos are dependent upon whether the asbestos is reduced to fibers or is in a non-friable form and whether the asbestos is air-borne or water-borne. The negative effects of asbestos are largely from inhalation and vessel preparation should eliminate the possibility of pieces of asbestos breaking free throughout the sinking operation. Loose asbestos pieces can lead to rafting and may wash ashore and dry up, causing them to break apart and be reintroduced into the atmosphere and negatively affect human health via inhalation.

Identifying the locations and types of asbestos onboard the vessel early on in the process is essential for vessel preparation and requires qualified asbestos inspectors. The method of demolition is also important to the management of asbestos on vessels. If the sinking method for the vessel requires explosives, any asbestos containing materials should be removed in order to prevent asbestos from getting into the environment. Intact and

undisturbed asbestos insulation need not be removed (U.S. Environmental Protection Agency & U.S. Maritime Administration, 2006).

Polychlorinated Biphenyls (PCBs):

PCBs belong to a broad family of man-made organic chemicals known as chlorinated hydrocarbons. They are oily liquids or solids, clear to yellow in color, with no smell or taste, that were manufactured from 1929 until their manufacture was banned in 1979. PCBs have been shown to cause cancer in animals, as well as in humans, along with a number of serious non-cancer health effects throughout the immune, reproductive, nervous, and endocrine systems in both groups.

The PCB regulations require manufactured products containing ≥ 50 ppm of solid PCBs and materials contaminated by spills of liquids containing PCBs to be properly disposed under 40 CFR Part 761. Liquid materials manufactured with PCBs, products containing solid PCBs, and materials containing PCBs as a result of spills need to be completely removed and must meet the Environmental Protection Agency (EPA) guidelines (U.S. Environmental Protection Agency & U.S. Maritime Administration, 2006).

Paint:

Paint and preservative coatings can be found on surfaces both on the interior and exterior of a vessel. Depending on the age of this ship, paint may be flammable or may contain toxic compounds, such as PCBs, heavy metals, and biocides. For the majority of candidate vessels for reefing, the primary paint related contaminants of concern are exterior hull coatings below the water line. These coatings contain of anti-fouling (AF) agents such as cooper, organotin compounds, and zinc. Scientific investigations by international organizations and governments have shown that certain anti-fouling systems used on vessels pose a substantial risk of both acute and chronic toxicity and other adverse impacts to ecologically and economically important non-target marine organisms.

If there is minimal active biocide remaining on the vessel, no preparation to the underwater hull area is necessary. It can be assumed that biocide activity is minimal if the antifouling coating on a candidate vessel is more than twelve years old and essentially all the underwater hull area is covered with marine growth. Furthermore, interior and exterior paint should be evaluated according to the PCB and solid and floatable debris guidelines (U.S. Environmental Protection Agency & U.S. Maritime Administration, 2006).

Solids/Debris/Floatables:

Solids, debris, and floatables are loose materials that could break free from the main body of the vessel during transportation and placement as an artificial reef, thereby affecting the ecological or aesthetic value of the marine environment and posing a risk to humans and animals. These materials can consist of vessel and cleanup debris.

The majority of marine debris does not biodegrade naturally. The longer that these materials remain in the marine environment, the greater the threat they pose to the environment. Some potential impacts of solids, debris and floatables on marine animals include entanglement, ingestion, injury, infection, and death. Alteration of the ecosystem and the increase in danger to navigation may also result from this debris.

All material or equipment that is not an integral part of the vessel and could become separated from it during sinking should be removed from the ship prior to sinking. Every surface should be thoroughly cleaned to remove all dirt, loose scale, trash, paint, hazardous materials, and other foreign matter. Any material that has been introduced or created by the clean-up process must be properly disposed of before the sinking (U.S. Environmental Protection Agency & U.S. Maritime Administration, 2006).

Other Materials of Environmental Concern:

Other materials of environmental concern are antifreeze and coolants, batteries, fire extinguishing systems, refrigerants and halons, mercury, lead, black and gray water, radioactive materials, and invasive species. These materials could have substantial negative effects to biological organisms, the environment, and future recreationalists. Adverse effects on the environment include any of the impacts mentioned in the previous sections. When placed in the marine environment, materials of environmental concern can have adverse effects on fish, wildlife, shellfish, recreation, and municipal water supplies.

Equipment or materials that may leach into the water column should be removed from the vessel prior to sinking. Wastewater that results from the cleanup process, including but not limited to, decontamination, contaminated, rain water, and eater from rising of tanks and lines, should be properly collected and disposed (U.S. Environmental Protection Agency & U.S. Maritime Administration, 2006).

The Sinking Process

After cleaning the vessel and stripping it from any hazardous materials that may cause damage to the environment, the laws and regulations regarding the implementation of an artificial reef should be followed according to site and country regulations (i.e. Endangered Species Act, Coral Reef Protection, Invasive Species, Coastal Zone Management Act, etc.). After the rules and regulations have been followed and met, the next critical step will be to decide on the method in which the vessel will be submerged. Detonation is the most common method and the fastest way to sink a vessel. The project manager will have to contact and hire a private company that specializes in this type of detonation.

On the days leading up to the sinking, the area must be cordoned off to prevent anyone from being near the sinking and detonation blast. Local police and coast guard will have to be contacted for assistance in this part of the project. Security guards will have to stay on board the vessel on the last few days leading up to the sinking to prevent any tampering with explosives and/or vandalism. These precautions should continue through the day of the sinking to prevent any injuries to bystanders and project personnel. Once the vessel has been submerged, professional or master scuba divers should conduct a safety survey of the vessel to clear the vessel for recreational use. Furthermore, the

vessel should be under constant monitoring to analyze any changes to the surrounding environment and to see if the goals of the project are met.

METHODS

Scope

The objective of this study is to calculate how many additional anglers and scuba divers need to visit Costa Rica in order to break-even on the cost of creating an artificial reef, using only the 13% revenue from sales taxes paid by the additional anglers and scuba divers who are attracted to Costa Rica by the artificial reef.

- Is sinking a vessel in Costa Rica, to create an artificial reef, economically feasible?

Study Area

Site Description: Costa Rica

The Republic of Costa Rica is situated in Central America and has an area of 5.1 x 10^4 km^2 (approx. 19,714 square miles) (Figure 1). It is surrounded on the west by the Pacific Ocean, Nicaragua to the north, Panama to the southeast, Ecuador to the south of Cocos Island, and on the east by the Caribbean Sea. With a population of 4.9 million (Worldometers, 2019); the country has one of Central America's leading national incomes per capita, $10,569 per year. In 2019, the Gross Domestic Product (GDP) of Costa Rica was estimated at US$60 billion. The GDP value of Costa Rica represents 0.05% of the world economy. Today, 14% of the labor force is involved in agriculture of banana, pineapple, cacao, coffee, and sugarcane. (*Costa Rica GDP* | *1960-2019 Data* | *2020-2022 Forecast* | *Historical* | *Chart* | *News*, n.d.).

Figure 1. Detailed map of Costa Rica (Nations Online Project, 2019)**.**

There were a number of variables used to calculate how many additional anglers and scuba divers need to visit Costa Rica in order to break-even on the cost of creating an artificial reef.

Data Needed

Cost to Sink a Vessel

The creation of an artificial reef can be costly and the price can range into the millions of dollars, depending on its size. These expenses represent a cash outflow from cities, provinces, countries, and non-profit organizations and may be considered good investments, that the local economy will benefit from in the future. For the local government, sinking ships to create artificial reefs presents an opportunity to enhance the development of tourism and increase local tax revenue (Jaksic et al., 2013).

For this study, the cost for sinking the USS General Hoyt S. Vandenberg (T-AGM-10) was used as the primary example of how much it would cost to sink a large vessel in Costa Rica. Out of the three largest artificial reefs implemented in Florida using vessels, the USS Vandenberg had the most detailed documentation in terms of pricing from the cleaning phase to the sinking phase. The total cost for preparing and sinking the USS Vandenberg amounted to $8.6 million (Adams et al., 2006).

Costa Rica's 13% Sales Tax

The current sales tax rate for Costa Rica is 13% and was used to calculate the sales tax revenue for each amenity that additional anglers and scuba divers will use when visiting Costa Rica. The sales tax is charged to consumers based on the purchase of certain goods and all types of services within Costa Rica (*Costa Rica Sales Tax Rate - VAT | 2006-2020 Data | 2021-2022 Forecast | Calendar*, 2020; Ernst & Young LLP, 2018).

High and Low Seasons

Two seasons occur in Costa Rica and each one has an economic impact on the country. The high season in Costa Rica, which is known as the dry season, takes place from December to March while the low, or wet, season takes place from April to November. During the high season, more ecotourists visit Costa Rica because the majority of ecotourists come from the United States, Canada, and Europe; they seek the pleasant, warm weather of Costa Rica's high season during their own country's wintery holiday months. During this time, prices for hotels, transportation, attractions, and recreational activities are higher than during the low season months, popular places are more crowded, and reservations need to be made in advance. In contrast, during the low season, the rainier weather brings in lower numbers of ecotourists, which also leads to reduced prices for related ecotourism services during these months (Raventos,

2006; *When to Go in Costa Rica*, 2020). For this study, two groups of dates were selected at random, with the condition that the dates had to fall within the high season or the low season. For the high season, the dates were from February 5, 2020 – February 15, 2020 and the low season dates were from July 26, 2019 – August 5, 2019.

High Costs and Low Costs

When collecting the prices for the amenities that will be used by the additional anglers and scuba divers, the highest and lowest prices for each amenity used during the high and low seasons were collected. This strategy was used to compare the difference between an ecotourist paying top dollar for their amenities while visiting Costa Rica versus one who only pays the minimum. It also served as a parameter when collecting the amenity prices.

Locations

Three locations were used as the possible sites for the implementation of an artificial reef in this study: Papagayo, Catalinas and Bat Islands, which are some of the most popular angling and scuba diving locations in Costa Rica (Papagayo Fishing Charters & Papagayo Fishing Charters, 2015; Trip Savvy, 2019). All three locations are in close proximity of each other and are located in the northwest part of Costa Rica.

Average Stay for Ecotourists

The average length of stay for most ecotourists who visit Costa Rica is six to ten days (*Great Costa Rica Itineraries*, 2020). This average may vary on a case-by-case basis but for the purpose of this study, the six to ten day average was used when selecting the dates for the high and low seasons.

Amenities for Anglers and Scuba Divers

The prices for the services and amenities needed by ecotourists visiting Costa Rica during the high and low seasons were collected to conduct these economic analyses. The prices were found and collected using online travel sites such as Expedia, Papagayo Fishing Charters, Rocket Frog Divers and the Costa Rica Guide. The prices for lodging, restaurants, boats (both fishing and scuba diving), ground transportation, and guides (both fishing and scuba diving) were collected and used to calculate how much each angler and scuba diver tends to spend during their stay in either the high or low season. As previously mentioned, the highest and lowest price of each service was collected for comparison purposes and also used as a parameter for when collecting the prices. These prices may vary on a case-by-case basis depending on the cost, season and amenity used by the ecotourist throughout their stay.

Payback Period

The payback period is the amount of time it takes to recover the cost of an investment or the length of time until an investment reaches a break-even point (Kagan, 2020). The payback period for the construction and maintenance of the artificial reef was calculated for one, five, ten, fifteen and twenty years. These year increments were used to compare the number of additional anglers and scuba divers needed to break-even in the construction of an artificial reef. The assumption is that as the years increase, the number of additional anglers and scuba divers that are needed per year will decrease.

Interest Rate of 2.75% and 5.00%

The current interest rate in Costa Rica is 2.75%. (*Costa Rica Sales Tax Rate - VAT | 2006-2020 Data | 2021-2022 Forecast | Calendar*, 2020). This interest rate was used to calculate the annual cost that Costa Rica would have to pay each year in order to pay off the reef in one, five, ten, fifteen or twenty years. The annual cost was then used to calculate the additional number of anglers and scuba divers needed to break-even for the same number of years. Additionally, for comparison purposes, a 5.00% interest rate was also used to calculate the annual cost and the number of additional anglers and scuba divers needed to break-even using the same amenity prices with the 2.75% interest rate. In order

to calculate the annual cost, the installment payment or capital recovery formula was used in the process.

Economic Analysis: Installment Payment or Capital Recovery

The installment payment or capital recovery formula was used to calculate how much Costa Rica will have to pay annually (annual cost) with interest included, to break-even in the construction of the artificial reef. The formula was used to calculate the annual costs using both 2.75% and 5.00% interest rates for one, five, ten, fifteen and twenty years.

The formula is as follows:

$$A = PV\left[\frac{i(1+i)^n}{(1+i)^n - 1}\right]$$

where

A = Uniform series of annual (end of year) payments

i = Interest rate

n = Number of Interest periods (usually years)

PV = Present value of the cost for the construction of the artificial reef (Initial Cost of the Construction)

Data Calculations

The calculation process for determining the number of additional anglers and scuba divers needed to break-even in the construction of an artificial reef, consisted of six steps. In this process, an example using the Appendix (Table A1 – Table A168) will be used to show how the calculations were made.

1. The prices for the amenities that each additional angler and scuba diver will use while visiting Costa Rica were collected for both high and low seasons at both high and low costs. The prices used were dependent on the length of stay of the angler or scuba diver. The prices for six, seven, eight, nine and ten days for each amenity within the three locations (Papagayo, Catalinas, and Bat Islands) were collected. These prices were collected using travel websites Expedia, Papagayo Fishing Charters, Rocket Frog Divers and the Costa Rica Guide.

   Example: Table A1 shows the low costs for the amenities for one angler visiting Papagayo during the low season (July 26, 2019 – August 5, 2019) for six to ten days. For an angler visiting for six days, the cost for a hotel room is $81.36, $354.00 for food, $1,200.00 for a fishing boat rental, $12.00 for ground transportation and $120.00 for a fishing guide for a grand total of $1,767.36. In other words, an angler visiting Papagayo for six days during the low season at low cost will spend approximately cost $1,767.36 for the whole stay. Table A2 – Table A24 show the costs for the amenities for anglers and scuba divers for both high and low seasons at high and low costs for all three locations.

2. The 13% sales tax was then calculated using the total costs for each of the amenities discussed. The sales tax for each individual amenity was then added together by their respective days. For example, all of the taxes for the amenities used for a six-day stay were added together.

   Example: Table A25 – A48 show the calculated 13% sales tax for each amenity shown in Table A1 – A24. Table A25 shows the 13% sales tax for the prices of the amenities shown on Table A1. The total cost for each amenity for an angler visiting for six days was multiplied by 0.13 (13%) as follows:

   -$81.36 *0.13 = $10.58 for hotel room,
   -$354.00*0.13 = $46.02 for food,
   -$1,200.00*0.13 = $156.00 for a boat rental,
   -$12.00*0.13 = $1.56 for ground transportation
   -$120.00*0.13 = $15.60 for a fishing guide.

   When the sales tax was calculated for each amenity, the total of the sales tax for an angler visiting for six days is $229.76. Following the same process, the sales tax for each season and cost were calculated for all three locations (Table A26 - A48).

3. The annual cost for one, five, ten, fifteen and twenty years was calculated using both 2.75% and 5.00% interest rates. The installment payment, or capital recovery formula, was used in this portion of the analysis to determine how much Costa Rica will have to pay each year in order to pay off the reef in one, five, ten, fifteen or twenty years. The annual cost for each location was calculated using the calculated sales tax of both additional anglers and scuba divers.

   Example: Table A49 – Table A168 show the annual costs calculated with both 2.75% and 5.00% interest rates, total costs with interest and the number of additional anglers and scuba divers needed to break-even for one, five, ten, fifteen and twenty years.

For Table A49, in order to calculate the annual cost with a 2.75% interest rate, the installment payment or capital recovery formula was used as follows:

$$\$8{,}836{,}500.00 = \$8{,}600{,}000.00\left[\frac{0.0275(1+0.0275)^{1}}{(1+0.0275)^{1}-1}\right]$$

where

A = $8,836,500.00

i = 0.0275 (2.75%)

n = 1 (years)

PV = $8,600,000.00

The annual cost to break-even on the construction of an artificial reef for one year is $8,836,500.00. For Table A50 – Table A168, the same calculation process was conducted with both interest rates in order to calculate the annual cost for one, five, ten, fifteen and twenty years.

4. Once the annual cost was calculated for each location, the number of additional anglers and scuba divers needed to break-even was calculated. For example, if Costa Rica was attempting to pay off the reef in one year, the total tax paid by each during their stay (i.e., 6, 7, 8, 9, or 10 days) for each season and cost was used to calculate the number of additional anglers and scuba divers. The annual cost for one, five, ten, fifteen and twenty years was divided by the amount of tax paid by each additional angler in their respective stay length, to get the number of additional anglers needed. The same process was conducted to attain the number of additional scuba divers needed. In Table A49, the total sales tax for an additional angler and scuba diver visiting Papagayo during the high season at low cost was used. These sales tax totals can be viewed on Table A25 – A48. For this example (Table A49), the total sales tax for an additional angler visiting for six days was $288.04 and $283.75 for an additional scuba diver. The annual cost was then divided by each sales tax individually.

   -$8,836,500.00 / $288.04 = 30,678 **additional anglers** needed to break-even in one year during the high season at low cost.
   -$8,836,500.00 / $283.75 = 31,141 **additional scuba divers** needed to break-even in one year during the high season at high cost

5. For Table A50 – Table A168, the same calculation process as step 4 was used to calculate the annual cost and the number of additional anglers and scuba divers needed to break-even for five, ten, fifteen and twenty years (Table 33).

6. The numbers of additional anglers and scuba divers that must be attracted to Costa Rica to pay for the project were calculated. In the results section, Tables 1 through 32 show the number of additional anglers and scuba divers needed to break-even for the construction and maintenance of an artificial reef for all three locations for one, five, ten, fifteen and twenty years.

RESULTS

Additional Anglers Needed to Break - Even

The three locations that were used in this study are located in close proximity of each other in the northwestern part of Costa Rica. When the prices for the amenities were collected, the prices between a fishing boat rental versus a scuba diving boat rental were the main difference between the costs of both ecotourist groups. The price for a fishing boat rental was the same for all three locations during the high and low seasons at both high and low costs (Tables A1 – A12). Therefore, the number of additional anglers needed to break-even in the construction of an artificial reef in Papagayo, Catalinas and Bat Islands, is similar for all three locations for one, five, ten, fifteen and twenty years.

Tables 1 through 8 show the total number of additional anglers needed in Papagayo, Catalinas and Bat Islands. When comparing these tables, Table 3 and 4 show the best-case scenario of how many additional anglers are needed to break-even for all the years. As anticipated, the number of additional anglers during the high season at high cost using both interest rates requires the least number of additional anglers for all the years calculated when compared to the other scenarios. Table 5 and 6 show the worst-case scenario because during the low season at low cost, in order to break-even, the number of additional anglers

needed is greater than any other scenario. When the high season at low cost (Tables 1 – 2) is compared to the low season at high cost (Tables 7 – 8), the high season requires more than double the number of additional anglers when compared to the low season.

When the number of additional anglers needed in the high season at high cost is compared to the number needed in the low season at low cost, the low season requires five times more additional anglers than the high season to break-even. If Costa Rica decided to break-even using the number for the low season, it may have a more difficult time paying for the artificial reef when compared to the high season. This is due to the decrease in tourism during these months, which also means reaching the number of additional anglers needed to break-even during this time period would become another challenge.

However, not all ecotourists pay the top or the lowest dollar for every single amenity and therefore, the number of additional anglers presented will vary. As expected, the number of additional anglers needed per year decreases as the payback period increases because as the years increase, the annual cost decreases as well, giving Costa Rica more time to pay off the artificial reef. It is important to note that even though the annual cost decreases as the years increase, the total cost with interest increases.

Additional Scuba Divers Needed in Papagayo

For Papagayo, Tables 9 – 16 show the numbers of additional scuba divers that are needed to break-even in the construction of an artificial reef. Similar to the scenarios of additional anglers, the best-case scenario for Papagayo would be during the high season at high cost (Tables 11 – 12) because the lowest number of additional scuba divers is needed to break-even in this scenario. Furthermore, Tables 13 – 14 show the worst-case scenario for Papagayo because it requires the greatest number of additional scuba divers to break-even when compared to all the other scenarios. When the high season at low cost (Tables 9 – 10) and the low season at high cost (Tables 15 – 16) are compared, the best scenario out of the two is the low season at high cost. The number of additional scuba divers needed for the high season at low cost is approximately twice as much as the number needed during the low season at high cost. In this scenario, the low season is the best choice.

Additional Scuba Divers Needed in Catalinas

For the Catalinas, Tables 17 – 24 show the number of additional scuba divers needed to break-even. Tables 19 – 20 show the best-case scenario because it requires the least number of additional scuba divers to pay off the artificial reef when compared to the rest of the scenarios for the Catalinas. Tables 21 – 22 show the worst-case scenario because it requires the greatest number of additional scuba divers to break-even in the Catalinas. When the high season at low cost (Tables 17 – 18) and the low season at high cost (Tables 23 – 24) are compared, the best scenario out of the two is the low season at high cost. The number of additional scuba divers needed for the high season at low cost is approximately twice as much as the number needed during the low season at high cost. In this scenario, the low season is the best choice.

Additional Scuba Divers Needed in Bat Islands

For the Bat Islands, Tables 25 – 32 show the number of additional scuba divers that are needed to break-even in Bat Islands. Tables 27 – 28 show the best-case scenario and Tables 29 – 30 show the worst-case scenario for Bat Islands. When the high season at low cost (Tables 25 – 26) and the low season at high cost (Tables 31 – 32) are compared, the best scenario out of the two is the low season at high cost. The number of additional scuba divers needed for the high season at low cost is approximately twice as much as the number

needed during the low season at high cost. In this scenario, the low season is the best choice.

The Annual Cost and Total Cost for Papagayo, Catalinas and Bat Islands

The annual costs for all three locations were the same for each year and were calculated using both 2.75% and 5.00% interest rates. Table 33 shows the annual costs and total costs with interest for all three locations for one, five, ten, fifteen and twenty years. As the years increase, the lower the annual cost will be. Paying off the artificial reef in five, ten, fifteen or twenty years may sound enticing at first, but looking closely at Table 33 the annual cost decreases as the years increase but the total cost with interest increases. If Costa Rica decides to take longer to pay for the implementation and maintenance of the artificial reef, it will be more expensive because the interest rate charges and the number of additional anglers and scuba divers that are needed will be greater.

Table 1. The total number of additional anglers needed per year to break-even on $8.6 million, high season, low cost, 2.75% interest rate, for 1, 5, 10, 15, and 20 years, Papagayo, Catalinas and Bat Islands, Costa Rica.

		Years				
		1	**5**	**10**	**15**	**20**
Days	**6**	30,678	6,473	3,456	2,456	1,961
	7	26,932	5,683	3,034	2,156	1,721
	8	23,514	4,961	2,649	1,883	1,503
	9	20,924	4,415	2,357	1,675	1,337
	10	18,818	3,971	2,120	1,507	1,203

Table 2. The total number of additional anglers needed per year to break-even on $8.6 million, high season, low cost, 5.00% interest rate, for 1, 5, 10, 15, and 20 years, Papagayo, Catalinas and Bat Islands, Costa Rica.

		Years				
		1	**5**	**10**	**15**	**20**
Days	**6**	31,349	6,896	3,867	2,876	2,396
	7	27,522	6,054	3,395	2,525	2,103
	8	24,029	5,286	2,964	2,205	1,836
	9	21,382	4,704	2,637	1,962	1,634
	10	19,230	4,230	2,372	1,764	1,470

Table 3. The total number of additional anglers needed per year to break-even on $8.6 million, high season, high cost, 2.75% interest rate, for 1, 5, 10, 15, and 20 years, Papagayo, Catalinas and Bat Islands, Costa Rica.

		Years				
		1	**5**	**10**	**15**	**20**
Days	**6**	7,067	1,491	796	566	452
	7	6,519	1,376	734	522	417
	8	5,637	1,189	635	451	360
	9	4,975	1,050	560	398	318
	10	4,488	947	506	359	287

Table 4. The total number of additional anglers needed per year to break-even on $8.6 million, high season, high cost, 5.00% interest rate, for 1, 5, 10, 15, and 20 years, Papagayo, Catalinas and Bat Islands, Costa Rica.

		Years				
		1	**5**	**10**	**15**	**20**
Days	**6**	7,222	1,589	891	663	552
	7	6,662	1,465	822	611	509
	8	5,761	1,267	711	529	440
	9	5,084	1,118	627	466	388
	10	4,586	1,009	566	421	350

Table 5. The total number of additional anglers needed per year to break-even on $8.6 million, low season, low cost, 2.75% interest rate, for 1, 5, 10, 15, and 20 years, Papagayo, Catalinas and Bat Islands, Costa Rica.

		Years				
		1	**5**	**10**	**15**	**20**
Days	**6**	38,460	8,115	4,332	3,079	2,458
	7	32,998	6,962	3,717	2,642	2,109
	8	28,870	6,091	3,252	2,311	1,845
	9	25,660	5,414	2,890	2,054	1,640
	10	23,076	4,869	2,599	1,847	1,475

Table 6. The total number of additional anglers needed per year to breakeven on $8.6 million, low season, low cost, 5.00% interest rate, for 1, 5, 10, 15, and 20 years, Papagayo, Catalinas and Bat Islands, Costa Rica.

		Years				
		1	**5**	**10**	**15**	**20**
Days	**6**	39,302	8,646	4,847	3,606	3,004
	7	33,721	7,418	4,159	3,094	2,577
	8	29,502	6,490	3,639	2,707	2,255
	9	26,221	5,768	3,234	2,406	2,004
	10	23,581	5,187	2,908	2,164	1,802

Table 7. The total number of additional anglers needed per year to break-even on $8.6 million, low season, high cost, 2.75% interest rate, for 1, 5, 10, 15, and 20 years, Papagayo, Catalinas and Bat Islands, Costa Rica.

		Years				
		1	**5**	**10**	**15**	**20**
Days	**6**	13,212	2,788	1,488	1,058	844
	7	11,333	2,391	1,277	907	724
	8	9,923	2,094	1,118	794	634
	9	8,803	1,857	992	705	563
	10	7,920	1,671	892	634	506

Table 8. The total number of additional anglers needed per year to break-even on $8.6 million, low season, high cost, 5.00% interest rate, for 1, 5, 10, 15, and 20 years, Papagayo, Catalinas and Bat Islands, Costa Rica.

		Years				
		1	**5**	**10**	**15**	**20**
Days	**6**	13,501	2,970	1,665	1,239	1,032
	7	11,582	2,548	1,428	1,063	885
	8	10,140	2,231	1,251	930	775
	9	8,996	1,979	1,110	825	687
	10	8,093	1,780	998	743	618

Table 9. The total number of additional scuba divers needed per year to break-even on $8.6 million, high season, low cost, 2.75% interest rate, for 1, 5, 10, 15, and 20 years, Papagayo, Costa Rica.

		Years				
		1	**5**	**10**	**15**	**20**
Days	**6**	31,141	6,571	3,508	2,493	1,990
	7	27,350	5,771	3,081	2,190	1,748
	8	23,878	5,038	2,690	1,912	1,526
	9	21,248	4,483	2,393	1,701	1,358
	10	19,109	4,032	2,153	1,530	1,221

Table 10. The total number of additional scuba divers needed per year to break-even on $8.6 million, high season, low cost, 5.00% interest rate, for 1, 5, 10, 15, and 20 years, Papagayo, Costa Rica.

		Years				
		1	**5**	**10**	**15**	**20**
Days	**6**	31,823	7,000	3,925	2,920	2,432
	7	27,949	6,148	3,447	2,564	2,136
	8	24,401	5,368	3,010	2,239	1,865
	9	21,713	4,776	2,678	1,992	1,659
	10	19,528	4,296	2,409	1,792	1,492

Table 11. The total number of additional scuba divers needed per year to break-even on $8.6 million, high season, high cost, 2.75% interest rate, for 1, 5, 10, 15, and 20 years, Papagayo, Costa Rica.

		Years				
		1	**5**	**10**	**15**	**20**
Days	**6**	7,443	1,571	838	596	476
	7	6,894	1,455	777	552	441
	8	5,958	1,257	671	477	381
	9	5,255	1,109	592	421	336
	10	4,742	1,000	534	380	303

Table 12. The total number of additional scuba divers needed per year to break-even on $8.6 million, high season, high cost, 5.00% interest rate, for 1, 5, 10, 15, and 20 years, Papagayo, Costa Rica.

		Years				
		1	**5**	**10**	**15**	**20**
Days	**6**	7,606	1,673	938	698	581
	7	7,045	1,550	869	646	538
	8	6,088	1,339	751	559	465
	9	5,370	1,181	662	493	410
	10	4,846	1,066	598	445	370

Table 13. The total number of additional scuba divers needed per year to break-even on $8.6 million, low season, low cost, 2.75% interest rate, for 1, 5, 10, 15, and 20 years, Papagayo, Costa Rica.

		Years				
		1	**5**	**10**	**15**	**20**
Days	**6**	39,192	8,269	4,415	3,138	2,505
	7	33,626	7,095	3,788	2,692	2,149
	8	29,419	6,207	3,314	2,355	1,880
	9	26,148	5,517	2,945	2,093	1,671
	10	23,515	4,962	2,649	1,883	1,503

Table 14. The total number of additional scuba divers needed per year to break-even on $8.6 million, low season, low cost, 5.00% interest rate, for 1, 5, 10, 15, and 20 years, Papagayo, Costa Rica.

		Years				
		1	**5**	**10**	**15**	**20**
Days	**6**	40,050	8,810	4,940	3,675	3,061
	7	34,363	7,559	4,238	3,153	2,626
	8	30,064	6,613	3,708	2,758	2,298
	9	26,721	5,878	3,296	2,452	2,042
	10	24,030	5,286	2,964	2,205	1,836

Table 15. The total number of additional scuba divers needed per year to breakeven on $8.6 million, low season, high cost, 2.75% interest rate, for 1, 5, 10, 15, and 20 years, Papagayo, Costa Rica.

		Years				
		1	**5**	**10**	**15**	**20**
Days	**6**	14,590	3,078	1,643	1,168	932
	7	12,517	2,641	1,410	1,002	800
	8	10,960	2,312	1,235	877	700
	9	9,721	2,051	1,095	778	621
	10	8,745	1,845	985	700	559

Table 16. The total number of additional scuba divers needed per year to break-even on $8.6 million, low season, high cost, 5.00% interest rate, for 1, 5, 10, 15, and 20 years, Papagayo, Costa Rica.

		Years				
		1	**5**	**10**	**15**	**20**
Days	**6**	14,909	3,280	1,839	1,368	1,139
	7	12,791	2,814	1,578	1,174	978
	8	11,200	2,464	1,381	1,028	856
	9	9,934	2,185	1,225	911	759
	10	8,936	1,966	1,102	820	683

Table 17. The total number of additional scuba divers needed per year to break-even on $8.6 million, high season, low cost, 2.75% interest rate, for 1, 5, 10, 15, and 20 years, Catalinas, Costa Rica.

		Years				
		1	**5**	**10**	**15**	**20**
Days	**6**	23,107	4,875	2,603	1,850	1,477
	7	20,165	4,255	2,271	1,614	1,289
	8	17,616	3,717	1,984	1,410	1,126
	9	15,671	3,306	1,765	1,255	1,002
	10	14,096	2,974	1,588	1,129	901

Table 18. The total number of additional scuba divers needed per year to break-even on $8.6 million, high season, low cost, 5.00% interest rate, for 1, 5, 10, 15, and 20 years, Catalinas, Costa Rica.

		Years				
		1	**5**	**10**	**15**	**20**
Days	**6**	23,613	5,194	2,912	2,167	1,805
	7	20,607	4,533	2,542	1,891	1,575
	8	18,001	3,960	2,220	1,652	1,376
	9	16,014	3,523	1,975	1,469	1,224
	10	14,405	3,169	1,777	1,322	1,101

Table 19. The total number of additional scuba divers needed per year to break-even on $8.6 million, high season, high cost, 2.75% interest rate, for 1, 5, 10, 15, and 20 years, Catalinas, Costa Rica.

		Years				
		1	**5**	**10**	**15**	**20**
Days	**6**	6,825	1,440	769	546	436
	7	6,279	1,325	707	503	401
	8	5,432	1,146	612	435	347
	9	4,795	1,012	540	384	306
	10	4,325	913	487	346	276

Table 20. The total number of additional scuba divers needed per year to break-even on $8.6 million, high season, high cost, 5.00% interest rate, for 1, 5, 10, 15, and 20 years, Catalinas, Costa Rica.

		Years				
		1	**5**	**10**	**15**	**20**
Days	**6**	6,974	1,534	860	640	533
	7	6,417	1,411	791	589	490
	8	5,551	1,221	685	509	424
	9	4,900	1,078	604	450	374
	10	4,420	972	545	406	338

Table 21. The total number of additional scuba divers needed per year to break-even on $8.6 million, low season, low cost, 2.75% interest rate, for 1, 5, 10, 15, and 20 years, Catalinas, Costa Rica.

		Years				
		1	**5**	**10**	**15**	**20**
Days	**6**	27,262	5,752	3,071	2,183	1,742
	7	23,383	4,934	2,634	1,872	1,495
	8	20,459	4,317	2,304	1,638	1,308
	9	18,184	3,837	2,048	1,456	1,162
	10	16,357	3,451	1,842	1,310	1,045

Table 22. The total number of additional scuba divers needed per year to break-even on $8.6 million, low season, low cost, 5.00% interest rate, for 1, 5, 10, 15, and 20 years, Catalinas, Costa Rica.

		Years				
		1	**5**	**10**	**15**	**20**
Days	**6**	27,859	6,128	3,436	2,556	2,129
	7	23,895	5,256	2,947	2,192	1,826
	8	20,907	4,599	2,579	1,918	1,598
	9	18,582	4,088	2,292	1,705	1,420
	10	16,715	3,677	2,062	1,534	1,277

Table 23. The total number of additional scuba divers needed per year to break-even on $8.6 million, low season, high cost, 2.75% interest rate, for 1, 5, 10, 15, and 20 years, Catalinas, Costa Rica.

		Years				
		1	**5**	**10**	**15**	**20**
Days	**6**	12,388	2,614	1,395	992	792
	7	10,627	2,242	1,197	851	679
	8	9,304	1,963	1,048	745	595
	9	8,255	1,742	930	661	528
	10	7,426	1,567	837	595	475

Table 24. The total number of additional scuba divers needed per year to break-even on $8.6 million, low season, high cost, 5.00% interest rate, for 1, 5, 10, 15, and 20 years, Catalinas, Costa Rica.

		Years				
		1	**5**	**10**	**15**	**20**
Days	**6**	12,659	2,785	1,561	1,162	967
	7	10,859	2,389	1,339	996	830
	8	9,507	2,091	1,173	872	727
	9	8,435	1,856	1,040	774	645
	10	7,589	1,669	936	696	580

Table 25. The total number of additional scuba divers needed per year to break-even on $8.6 million, high season, low cost, 2.75% interest rate, for 1, 5, 10, 15, and 20 years, Bat Islands, Costa Rica.

		Years				
		1	**5**	**10**	**15**	**20**
Days	**6**	28,551	6,024	3,216	2,286	1,825
	7	25,024	5,280	2,819	2,003	1,599
	8	21,851	4,611	2,461	1,749	1,397
	9	19,443	4,102	2,190	1,557	1,243
	10	17,487	3,690	1,970	1,400	1,118

Table 26. The total number of additional scuba divers needed per year to break-even on $8.6 million, high season, low cost, 5.00% interest rate, for 1, 5, 10, 15, and 20 years, Bat Islands, Costa Rica.

		Years				
		1	**5**	**10**	**15**	**20**
Days	**6**	29,177	6,418	3,599	2,677	2,230
	7	25,572	5,625	3,154	2,346	1,954
	8	22,330	4,912	2,754	2,049	1,706
	9	19,869	4,371	2,451	1,823	1,518
	10	17,870	3,931	2,204	1,640	1,366

Table 27. The total number of additional scuba divers needed per year to break-even on $8.6 million, high season, high cost, 2.75% interest rate, for 1, 5, 10, 15, and 20 years, Bat Islands, Costa Rica.

		Years				
		1	**5**	**10**	**15**	**20**
Days	**6**	7,271	1,534	819	582	465
	7	6,722	1,418	757	538	430
	8	5,811	1,226	655	465	371
	9	5,127	1,082	577	410	328
	10	4,626	976	521	370	296

Table 28. The total number of additional scuba divers needed per year to break-even on $8.6 million, high season, high cost, 5.00% interest rate, for 1, 5, 10, 15, and 20 years, Bat Islands, Costa Rica.

		Years				
		1	**5**	**10**	**15**	**20**
Days	**6**	7,431	1,635	916	682	568
	7	6,870	1,511	847	630	525
	8	5,938	1,306	732	545	454
	9	5,239	1,152	646	481	400
	10	4,727	1,040	583	434	361

Table 29. The total number of additional scuba divers needed per year to break-even on $8.6 million, low season, low cost, 2.75% interest rate, for 1, 5, 10, 15, and 20 years, Bat Islands, Costa Rica.

		Years				
		1	**5**	**10**	**15**	**20**
Days	**6**	35,176	7,422	3,962	2,816	2,248
	7	30,178	6,367	3,399	2,416	1,929
	8	26,403	5,571	2,974	2,114	1,688
	9	23,467	4,951	2,643	1,879	1,500
	10	21,106	4,453	2,377	1,690	1,349

Table 30. The total number of additional scuba divers needed per year to break-even on $8.6 million, low season, low cost, 5.00% interest rate, for 1, 5, 10, 15, and 20 years, Bat Islands, Costa Rica.

		Years				
		1	**5**	**10**	**15**	**20**
Days	**6**	35,946	7,907	4,434	3,298	2,747
	7	30,839	6,784	3,804	2,830	2,357
	8	26,981	5,935	3,328	2,476	2,062
	9	23,981	5,275	2,958	2,200	1,833
	10	21,568	4,744	2,660	1,979	1,648

Table 31. The total number of additional scuba divers needed per year to break-even on $8.6 million, low season, high cost, 2.75% interest rate, for 1, 5, 10, 15, and 20 years, Bat Islands, Costa Rica.

		Years				
		1	**5**	**10**	**15**	**20**
Days	**6**	13,943	2,942	1,571	1,116	891
	7	11,962	2,524	1,347	958	765
	8	10,474	2,210	1,180	838	669
	9	9,290	1,960	1,046	744	594
	10	8,358	1,763	941	669	534

Table 32. The total number of additional scuba divers needed per year to break-even on $8.6 million, low season, high cost, 5.00% interest rate, for 1, 5, 10, 15, and 20 years, Bat Islands, Costa Rica.

		Years				
		1	**5**	**10**	**15**	**20**
Days	**6**	14,249	3,134	1,757	1,307	1,089
	7	12,224	2,689	1,508	1,122	934
	8	10,703	2,354	1,320	982	818
	9	9,494	2,088	1,171	871	726
	10	8,541	1,879	1,053	784	653

Table 33. The annual cost and total cost, with 2.75% and 5.00% interest rates, of how much it will cost to pay for the construction and maintenance of an artificial reef in Papagayo, Catalinas and Bat Islands, Costa Rica for 1,5,10,15 and 20 years.

Years	Annual Cost (2.75% Interest Rate)	Total Cost With 2.75% Interest	Annual Cost (5.00% Interest Rate)	Total Cost With 5.00% Interest
1	$8,836,500	$8,836,500	$9,030,000	$9,030,000
5	$1,864,466	$9,322,328	$1,986,383	$9,931,916
10	$995,362	$9,953,616	$1,113,739	$11,137,393
15	$707,429	$10,611,433	$828,544	$12,428,155
20	$564,777	$11,295,538	$690,086	$13,801,725

Considering the results and as previously mentioned, not all ecotourists pay the top or the lowest dollar for every single amenity, and therefore the numbers of additional anglers and scuba divers presented will vary. As expected, the number of additional anglers and scuba divers needed per year decreases as the years increase because as the years increase, the annual cost decreases, thereby giving Costa Rica more time to pay off the required annual cost each year for the artificial reef. However, even though the annual cost decreases as the years increase, the total cost with interest continues to increase and it will take longer to break-even on the implementation of the artificial reef, so it will be more expensive to break-even.

DISCUSSION

Additional Anglers and Scuba Divers

When looking at the results of how many additional anglers are needed to break-even on $8.6 million, more additional anglers and scuba divers are needed to break-even for one year when compared with five, ten, fifteen, and twenty years in all three locations. With this in mind, the best payment plan for the implementation of an artificial reef for Costa Rica is to attempt to pay it off as soon as economically possible. This method will require the attraction of a greater number of additional anglers and scuba divers but in the end, the total cost with interest will not increase substantially. As the years increase, the annual cost decreases per year but the total cost with interest increases, therefore making the construction of the artificial reef more expensive than the original cost. Furthermore, the costs calculated in this study were calculated for one individual additional angler and scuba diver and are underestimated because these ecotourists will most likely visit with friends and family, which will increase the prices calculated in this study.

As mentioned in the literature-cited section of this study, in 2010, M.Sc. Max Alberto Soto Jiménez published a study (*Analysis of the Economic Contribution of Recreational and Commercial Fisheries to the Costa Rican*

Economy) on how many total American and Canadian anglers visited Costa Rica. Throughout the whole year of 2008, after conducting surveys at the Juan Santamaría and Liberia airports, Jiménez concluded that 283,790 anglers visited Costa Rica throughout 2008 alone. He also calculated that the total foreign currency income for Costa Rica, due to the anglers' expenses, was approximately $467 million. Out of the $467 million, $138 million were used on expenses and investments (boats, fuel, repairs and maintenance, crews, insurance, taxes, accessories and furniture), $329 million was spent on travel including $119 million in lodging, $15.6 in restaurants, $88 million on flights and fishing guides, $6 million on ground transportation, along with other miscellaneous costs (M. A. S. Jiménez, 2010).

With the information presented in this study, it is possible for Costa Rica to generate the necessary revenue via sales tax to break-even on $8.6 million in one year in order to sink a retired vessel. The number of anglers that was calculated by M.A.S. Jiménez in 2008 shows that this project has potential to become a reality in the future. The number of anglers that visited Costa Rica in 2008 is much greater than any of the numbers of additional anglers that were calculated in this study including the number of additional anglers needed during the low season at low cost, the worst case scenario.

When comparing the results (Tables 1 – 32) to the 283,790 anglers that visited Costa Rica in 2008, the additional percentages (Tables 34 – 41) show that the additional number of anglers and scuba divers needed for the implementation of an artificial reef are economically feasible. For example, the additional percentage for the additional number of anglers needed to break-even in one year that visit for six days during the high season at high cost at 2.75% interest is 2.49% (Table 36) and 2.54% at a 5.00% interest rate (Table 37). The additional percentage for the additional number anglers needed to break-even in one year that visit for six days during the high season at low cost at 2.75% interest is 10.81% (Table 34) and 11.05% at a 5.00% interest rate (Table 35). Continuing to look at breaking-even in one year, the additional percentage for additional anglers visiting for six days needed during the low season at high cost at 2.75% interest is 4.66% (Table 40) and 4.76% at a 5.00% interest rate (Table 41). Furthermore, the additional percentage for the additional number of anglers that visit for six days that are needed during the low season at low cost at 2.75% interest is 13.55% (Table 38) and 13.85% at a 5.00% interest rate (Table 39).

As expected, the additional percentages for each season and cost decrease as the days and years increase. Taking a closer look at Table 34, to break-even in one year, the additional percentage decreases from 10.81% of additional anglers visiting for six days to 2.28% for five years, 1.22% for ten,

0.87% for fifteen, and 0.69% for twenty years. As the length of stay increases, the additional percentages decrease even more. The additional percentage for the number of additional anglers needed to break-even in one year, visiting for ten days is 6.63%, 1.40% for five years, 0.75% for ten years, 0.53% for fifteen years, and 0.42% for twenty years (Table 34). The same pattern can be viewed throughout Table 35 to Table 41, especially if the season and cost being calculated changes.

When comparing the additional percentages of the additional anglers needed between the high and low costs, the high costs for both high and low seasons show lower additional percentages than the additional percentages of the low costs. These additional percentages of additional anglers needed compared to the 283,790 anglers that visited in 2008 are low and continue to decrease as the length of stay and the years needed to break-even increase, and show that Costa Rica has the potential to pay off the reef by attracting the additional number of anglers visiting during both the high and low seasons at both high and low costs. All Costa Rica needs to do is attract the most additional anglers and scuba divers during the high season at high cost because the lowest number of additional anglers and scuba divers are needed during that time and cost when compared to the rest. It would also be beneficial to entice the

additional ecotourists to stay for ten days or longer, and/or choose to break-even in more than a one-year timeframe.

Table 34. Additional percentage of additional anglers needed in Papagayo, Catalinas and Bat Islands, Costa Rica to breakeven on $8.6 million, high season, low cost, 2.75% interest rate, for 1, 5, 10, 15, and 20 years, when compared to the 283,790 anglers that visited Costa Rica in 2008 (M. A. S. Jiménez, 2010).

		Years				
		1	**5**	**10**	**15**	**20**
Days	**6**	10.81%	2.28%	1.22%	0.87%	0.69%
	7	9.49%	2.00%	1.07%	0.76%	0.61%
	8	8.29%	1.75%	0.93%	0.66%	0.53%
	9	7.37%	1.56%	0.83%	0.59%	0.47%
	10	6.63%	1.40%	0.75%	0.53%	0.42%

Table 35. Additional percentage of additional anglers needed in Papagayo, Catalinas and Bat Islands, Costa Rica to breakeven on $8.6 million, high season, low cost, 5.00% interest rate, for 1, 5, 10, 15, and 20 years, when compared to the 283,790 anglers that visited Costa Rica in 2008 (M. A. S. Jiménez, 2010).

		Years				
		1	**5**	**10**	**15**	**20**
Days	**6**	11.05%	2.43%	1.36%	1.01%	0.84%
	7	9.70%	2.13%	1.20%	0.89%	0.74%
	8	8.47%	1.86%	1.04%	0.78%	0.65%
	9	7.53%	1.66%	0.93%	0.69%	0.58%
	10	6.78%	1.49%	0.84%	0.62%	0.52%

Table 36. Additional percentage of additional anglers needed in Papagayo, Catalinas and Bat Islands, Costa Rica to breakeven on $8.6 million, high season, high cost, 2.75% interest rate, for 1, 5, 10, 15, and 20 years, when compared to the 283,790 anglers that visited Costa Rica in 2008 (M. A. S. Jiménez, 2010).

		Years				
		1	**5**	**10**	**15**	**20**
Days	**6**	2.49%	0.53%	0.28%	0.20%	0.16%
	7	2.30%	0.48%	0.26%	0.18%	0.15%
	8	1.99%	0.42%	0.22%	0.16%	0.13%
	9	1.75%	0.37%	0.20%	0.14%	0.11%
	10	1.58%	0.33%	0.18%	0.13%	0.10%

Table 37. Additional percentage of additional anglers needed in Papagayo, Catalinas and Bat Islands, Costa Rica to breakeven on $8.6 million, high season, high cost, 5.00% interest rate, for 1, 5, 10, 15, and 20 years, when compared to the 283,790 anglers that visited Costa Rica in 2008 (M. A. S. Jiménez, 2010).

		Years				
		1	**5**	**10**	**15**	**20**
Days	**6**	2.54%	0.56%	0.31%	0.23%	0.19%
	7	2.35%	0.52%	0.29%	0.22%	0.18%
	8	2.03%	0.45%	0.25%	0.19%	0.16%
	9	1.79%	0.39%	0.22%	0.16%	0.14%
	10	1.62%	0.36%	0.20%	0.15%	0.12%

Table 38. Additional percentage of additional anglers needed in Papagayo, Catalinas and Bat Islands, Costa Rica to breakeven on $8.6 million, low season, low cost, 2.75% interest rate, for 1, 5, 10, 15, and 20 years, when compared to the 283,790 anglers that visited Costa Rica in 2008 (M. A. S. Jiménez, 2010).

		Years				
		1	**5**	**10**	**15**	**20**
Days	**6**	13.55%	2.86%	1.53%	1.08%	0.87%
	7	11.63%	2.45%	1.31%	0.93%	0.74%
	8	10.17%	2.15%	1.15%	0.81%	0.65%
	9	9.04%	1.91%	1.02%	0.72%	0.58%
	10	8.13%	1.72%	0.92%	0.65%	0.52%

Table 39. Additional percentage of additional anglers needed in Papagayo, Catalinas and Bat Islands, Costa Rica to breakeven on $8.6 million, low season, low cost, 5.00% interest rate, for 1, 5, 10, 15, and 20 years, when compared to the 283,790 anglers that visited Costa Rica in 2008 (M. A. S. Jiménez, 2010).

		Years				
		1	**5**	**10**	**15**	**20**
Days	**6**	13.85%	3.05%	1.71%	1.27%	1.06%
	7	11.88%	2.61%	1.47%	1.09%	0.91%
	8	10.40%	2.29%	1.28%	0.95%	0.79%
	9	9.24%	2.03%	1.14%	0.85%	0.71%
	10	8.31%	1.83%	1.02%	0.76%	0.64%

Table 40. Additional percentage of additional anglers needed in Papagayo, Catalinas and Bat Islands, Costa Rica to breakeven on $8.6 million, low season, high cost, 2.75% interest rate, for 1, 5, 10, 15, and 20 years, when compared to the 283,790 anglers that visited Costa Rica in 2008 (M. A. S. Jiménez, 2010).

		Years				
		1	**5**	**10**	**15**	**20**
Days	**6**	4.66%	0.98%	0.52%	0.37%	0.30%
	7	3.99%	0.84%	0.45%	0.32%	0.26%
	8	3.50%	0.74%	0.39%	0.28%	0.22%
	9	3.10%	0.65%	0.35%	0.25%	0.20%
	10	2.79%	0.59%	0.31%	0.22%	0.18%

Table 41. Additional percentage of additional anglers needed in Papagayo, Catalinas and Bat Islands, Costa Rica to breakeven on $8.6 million, low season, high cost, 5.00% interest rate, for 1, 5, 10, 15, and 20 years, when compared to the 283,790 anglers that visited Costa Rica in 2008 (M. A. S. Jiménez, 2010).

		Years				
		1	**5**	**10**	**15**	**20**
Days	**6**	4.76%	1.05%	0.59%	0.44%	0.36%
	7	4.08%	0.90%	0.50%	0.37%	0.31%
	8	3.57%	0.79%	0.44%	0.33%	0.27%
	9	3.17%	0.70%	0.39%	0.29%	0.24%
	10	2.85%	0.63%	0.35%	0.26%	0.22%

Economic Benefits

The implementation of a retired vessel as an artificial reef will have several economic benefits for Costa Rica. Jakšić et al. states that the researchers who studied the economic effects of the implementation of artificial reefs support the hypothesis of submerging artificial structures near coral reefs because they can mitigate anthropogenic impacts, while at the same time providing the means for the development of the local economy. The project will bring additional ecotourists and tourists that will take advantage of hotels, ground transportation and restaurants of local communities, which will lead to job security and the creation of more jobs. Divers around the globe are in constant pursuit of new challenges and wreck diving presents an exciting alternative. The construction of an artificial reef will also provide new inhabitable areas for marine life, attracting game sized fish to the area where smaller fish shelter and therefore attracting recreational anglers as well (Jaksic et al., 2013).

Annual Maintenance Costs

Artificial reefs require annual maintenance and upkeep in order for the aquatic fauna and ecotourists to use the structure safely. To pay for this expense, the recommendation to Costa Rica is to incorporate the 5.00% interest rate to the annual cost on the year the maintenance will take place. The current interest rate in Costa Rica is 2.75%. Therefore, if 5.00% interest is used, that

gives Costa Rica 2.25% more in interest that could be used towards maintenance.

Publicity

In order for Costa Rica to attract additional anglers and scuba divers to the new potential artificial reef, they must promote and publicize the project. Publicity starts as soon as the project committee begins talking to the public and to other groups about a potential artificial reef. It should continue through the solicitation of local government supporters, fundraising efforts and the permit application process. Publicity is crucial to fundraising campaigns, to finding volunteers, and to getting anglers and scuba divers to visit the site well after the project is completed. Several methods to publicize the project are as follows:

- Newsletters
- Websites
- Hiring marketing and public relations firms to represent the project nationwide
- Industry trade shows booths
- Local TV and radio talk shows
- Invite magazine and newspaper reporters to events
- Grant interviews
- Enlist celebrities and other dignitaries to be part of the events

- Solicit television networks to film documentary

Once the vessel is transported to its final resting place, the demand for interviews and publicity tours will increase. The Publicity Committee should make sure that all tours are of high quality by assisting other committees in the development of map tour routes, train guides, marking hazards and setting barricades, and providing appropriate handicapped access and toilet facilities. Local officials should be invited to visit the vessel (Foster, 2001). All of these steps should assist Costa Rica in spreading the word of this new reef with the hopes that it will attract additional anglers and scuba divers to come and enjoy this sunken structure.

CONCLUSION

The implementation of retired vessels as artificial reefs will greatly improve the conservation and economic development in Costa Rica. This will bring revenue to the surrounding communities and will assist with job security and the creation of new jobs for the citizens of Costa Rica. With the approach of using only the sales tax of the amenities used by ecotourists to pay for the reef, Costa Rica will not have to provide any payment for this project but will greatly benefit from it. Ecotourists will be the sole payers for this project while at the same time enjoying it recreationally. This project will benefit Costa Rica financially and ecotourists recreationally. In conclusion, there are several important points that need to be addressed that will assist with any future research regarding the implementation of an artificial reef.

Future Research

Angling and Scuba Diving Businesses

Research that will further assist with the development of this study would include travel to Costa Rica to conduct more investigative work with the sport fishing and scuba diving businesses. It is important to talk to the business owners and employees that run these places and ask questions regarding the number of

anglers or scuba divers that visit their facilities during the high and low seasons. In addition, questions about the prices that they charge and the packages offered for each trip are very important factors to know.

Functioning Contact Information

Throughout the development phase of this study, attempts were made to make contact with several of the most popular fishing and scuba diving locations in Costa Rica, with no availability. Many of these businesses have websites, emails and phone numbers that are no longer in service or being checked. Having functioning phone numbers and websites will greatly benefit these businesses by answering the questions of potential ecotourists. The businesses that did respond to the emails and calls were not able to provide any information on how many anglers or scuba divers used their business facilities because they did not keep a detailed record of such information. As previously mentioned, visiting these businesses is crucial in the future development of this study.

Government of Costa Rica

Once the information for the fishing and scuba diving businesses has been collected and analyzed using economic analyses, this information, including this study, will be presented to the proper government officials in Costa Rica. The findings of this study will be shared and the implementation of an artificial reef

using a retired vessel will be proposed to attract additional anglers and scuba divers.

Artificial Reef International

Contacting Artificial Reef International (ARI) will be the next important step. ARI creates artificial reefs for economic development and enhancements, adhering to strict regulations. ARI includes cross functional teams of industry leaders and subject matter experts across the globe, bringing more than 25 years of experience in highly competitive, market-driven industries such as artificial reefing, scuba diving, water sports, fisheries, and sailing (Artificial Reefs International, 2020).

During the early phase of this study, Captain Joe Weatherby, a diver and artificial reef developer with ARI, provided the information on the USS Vandenberg project that was used throughout this study. Captain Weatherby was in charge of the entire USS Vandenberg project and showed interest in providing further assistance with the implementation of this project.

Infrastructure Impact

With the potential implementation of an artificial reef using a retired vessel in Costa Rica, the country must address the possible influx of ecotourists. The coastal community surrounding the possible resting site must make the proper preparations by having enough hotel space, sanitary facilities, restaurants, etc., to accommodate these additional ecotourists. This preparation must occur before or concurrently with the preparation of the vessel being used. This will help Costa Rica cater to these additional ecotourists and continue to attract future visitors to the coastal communities surrounding the site of the artificial reef, therefore yielding additional revenue for the country.

More Protection Laws and Regulations

In a larger scale, the lawmakers of Costa Rica need to give serious consideration to the implementation of stricter laws and regulations for the conservation and protection of natural reefs. What Costa Rica currently has are laws that regulate the activities in the coastal zone that affect coral reefs indirectly, like pollution, fisheries, wildlife protection, and biodiversity use and conservation. A major problem that Costa Rica currently faces is that a different government institution enforces each aforementioned activity. The result of this is that there is lack of enforcement and institutional overlap. The only part of the Costa Rican government that protects coral reefs is the Ministerio de Ambiente y

Energía (MINAE, Ministry of the Environment) through its agency Sistema Nacional de Áreas de Conservación (SINAC, National System of Conservation Areas) (Cortés et al., 2010). If Costa Rica continues to ignore the anthropogenic impacts on their natural reefs, all of their natural reefs will be completely destroyed, leading to a disastrous revenue loss for the country and a detrimental loss for the world, both economically and environmentally.

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APPENDIX: AMENITIES, ANGLERS AND SCUBA DIVERS

TOTAL FOR THE AMENITIES USED BY ANGLERS AND SCUBA DIVERS

Table A1. The low costs of one angler visiting Costa Rica for six to ten days during the low season (July 26, 2019 - August 5, 2019) in Papagayo.

Days	Season	Cost	Date	Hotel (Lodging)	Restaurants	Boat	Ground Transportation	Guides	Total
6	Low	Low	07/26/19 - 08/01/19	$81.36	$354.00	$1,200.00	$12.00	$120.00	**$1,767.36**
7	Low	Low	07/26/19 - 08/02/19	$94.92	$413.00	$1,400.00	$12.00	$140.00	**$2,059.92**
8	Low	Low	07/26/19 - 08/03/19	$108.48	$472.00	$1,600.00	$14.00	$160.00	**$2,354.48**
9	Low	Low	07/26/19 - 08/04/19	$122.04	$531.00	$1,800.00	$16.00	$180.00	**$2,649.04**
10	Low	Low	07/26/19 - 08/05/19	$135.60	$590.00	$2,000.00	$20.00	$200.00	**$2,945.60**

Table A2. The high costs of one angler visiting Costa Rica for six to ten days during the low season (July 26, 2019 - August 5, 2019) in Papagayo.

Days	Season	Cost	Date	Hotel (Lodging)	Restaurants	Boat	Ground Transportation	Guides	Total
6	Low	High	07/26/19 - 08/01/19	$2,373.00	$510.00	$1,725.00	$192.00	$345.00	**$5,145.00**
7	Low	High	07/26/19 - 08/02/19	$2,768.50	$595.00	$2,012.50	$219.00	$402.50	**$5,997.50**
8	Low	High	07/26/19 - 08/03/19	$3,164.00	$680.00	$2,300.00	$246.00	$460.00	**$6,850.00**
9	Low	High	07/26/19 - 08/04/19	$3,559.50	$765.00	$2,587.50	$292.00	$517.50	**$7,721.50**
10	Low	High	07/26/19 - 08/05/19	$3,955.00	$850.00	$2,875.00	$328.00	$575.00	**$8,583.00**

Table A3. The low costs of one angler visiting Costa Rica for six to ten days during the high season (January 13, 2020 - January 23, 2020) in Papagayo.

Days	Season	Cost	Date	Hotel (Lodging)	Restaurants	Boat	Ground Transportation	Guides	Total
6	High	Low	01/13/20-01/19/20	$164.72	$354.00	$1,200.00	$377.00	$120.00	**$2,215.72**
7	High	Low	01/13/20-01/20/20	$189.84	$413.00	$1,400.00	$381.00	$140.00	**$2,523.84**
8	High	Low	01/13/20-01/21/20	$214.70	$472.00	$1,600.00	$444.00	$160.00	**$2,890.70**
9	High	Low	01/13/20-01/22/20	$239.56	$531.00	$1,800.00	$498.00	$180.00	**$3,248.56**
10	High	Low	01/13/20-01/23/20	$270.07	$590.00	$2,000.00	$552.00	$200.00	**$3,612.07**

Table A4. The high costs of one angler visiting Costa Rica for six to ten days during the high season (January 13, 2020 - January 23, 2020) in Papagayo.

Days	Season	Cost	Date	Hotel (Lodging)	Restaurants	Boat	Land Transportation	Guides	Total
6	High	High	01/13/20-01/19/20	$1,670.14	$510.00	$1,725.00	$5,368.00	$345.00	**$9,618.14**
7	High	High	01/13/20-01/20/20	$2,046.43	$595.00	$2,012.50	$5,370.00	$402.50	**$10,426.43**
8	High	High	01/13/20-01/21/20	$2,352.66	$680.00	$2,300.00	$6,265.00	$460.00	**$12,057.66**
9	High	High	01/13/20-01/22/20	$2,634.03	$765.00	$2,587.50	$7,160.00	$517.50	**$13,664.03**
10	High	High	01/13/20-01/23/20	$2,791.10	$850.00	$2,875.00	$8,054.00	$575.00	**$15,145.10**

Table A5. The low costs of one angler visiting Costa Rica for six to ten days during the low season (July 26, 2019 - August 5, 2019) in Catalinas.

Days	Season	Cost	Date	Hotel (Lodging)	Restaurants	Boat	Ground Transportation	Guides	Total
6	Low	Low	07/26/19 - 08/01/19	$81.36	$354.00	$1,200.00	$12.00	$120.00	**$1,767.36**
7	Low	Low	07/26/19 - 08/02/19	$94.92	$413.00	$1,400.00	$12.00	$140.00	**$2,059.92**
8	Low	Low	07/26/19 - 08/03/19	$108.48	$472.00	$1,600.00	$14.00	$160.00	**$2,354.48**
9	Low	Low	07/26/19 - 08/04/19	$122.04	$531.00	$1,800.00	$16.00	$180.00	**$2,649.04**
10	Low	Low	07/26/19 - 08/05/19	$135.60	$590.00	$2,000.00	$20.00	$200.00	**$2,945.60**

Table A6. The high costs of one angler visiting Costa Rica for six to ten days during the low season (July 26, 2019 - August 5, 2019) in Catalinas.

Days	Season	Cost	Date	Hotel (Lodging)	Restaurants	Boat	Ground Transportation	Guides	Total
6	Low	High	07/26/19 - 08/01/19	$2,373.00	$510.00	$1,725.00	$192.00	$345.00	**$5,145.00**
7	Low	High	07/26/19 - 08/02/19	$2,768.50	$595.00	$2,012.50	$219.00	$402.50	**$5,997.50**
8	Low	High	07/26/19 - 08/03/19	$3,164.00	$680.00	$2,300.00	$246.00	$460.00	**$6,850.00**
9	Low	High	07/26/19 - 08/04/19	$3,559.50	$765.00	$2,587.50	$292.00	$517.50	**$7,721.50**
10	Low	High	07/26/19 - 08/05/19	$3,955.00	$850.00	$2,875.00	$328.00	$575.00	**$8,583.00**

Table A7. The low costs of one angler visiting Costa Rica for six to ten days during the high season (January 13, 2020 - January 23, 2020) in Catalinas.

Days	Season	Cost	Date	Hotel (Lodging)	Restaurants	Boat	Ground Transportation	Guides	Total
6	High	Low	01/13/20-01/19/20	$164.72	$354.00	$1,200.00	$377.00	$120.00	**$2,215.72**
7	High	Low	01/13/20-01/20/20	$189.84	$413.00	$1,400.00	$381.00	$140.00	**$2,523.84**
8	High	Low	01/13/20-01/21/20	$214.70	$472.00	$1,600.00	$444.00	$160.00	**$2,890.70**
9	High	Low	01/13/20-01/22/20	$239.56	$531.00	$1,800.00	$498.00	$180.00	**$3,248.56**
10	High	Low	01/13/20-01/23/20	$270.07	$590.00	$2,000.00	$552.00	$200.00	**$3,612.07**

Table A8. The high costs of one angler visiting Costa Rica for six to ten days during the high season (January 13, 2020 - January 23, 2020) in Catalinas.

Days	Season	Cost	Date	Hotel (Lodging)	Restaurants	Boat	Ground Transportation	Guides	Total
6	High	High	01/13/20-01/19/20	$1,670.14	$510.00	$1,725.00	$5,368.00	$345.00	**$9,618.14**
7	High	High	01/13/20-01/20/20	$2,046.43	$595.00	$2,012.50	$5,370.00	$402.50	**$10,426.43**
8	High	High	01/13/20-01/21/20	$2,352.66	$680.00	$2,300.00	$6,265.00	$460.00	**$12,057.66**
9	High	High	01/13/20-01/22/20	$2,634.03	$765.00	$2,587.50	$7,160.00	$517.50	**$13,664.03**
10	High	High	01/13/20-01/23/20	$2,791.10	$850.00	$2,875.00	$8,054.00	$575.00	**$15,145.10**

Table A9. The low costs of one angler visiting Costa Rica for six to ten days during the low season (July 26, 2019 - August 5, 2019) in Bat Islands.

Days	Season	Cost	Date	Hotel (Lodging)	Restaurants	Boat	Ground Transportation	Guides	Total
6	Low	Low	07/26/19 - 08/01/19	$81.36	$354.00	$1,200.00	$12.00	$120.00	**$1,767.36**
7	Low	Low	07/26/19 - 08/02/19	$94.92	$413.00	$1,400.00	$12.00	$140.00	**$2,059.92**
8	Low	Low	07/26/19 - 08/03/19	$108.48	$472.00	$1,600.00	$14.00	$160.00	**$2,354.48**
9	Low	Low	07/26/19 - 08/04/19	$122.04	$531.00	$1,800.00	$16.00	$180.00	**$2,649.04**
10	Low	Low	07/26/19 - 08/05/19	$135.60	$590.00	$2,000.00	$20.00	$200.00	**$2,945.60**

Table A10. The high costs of one angler visiting Costa Rica for six to ten days during the low season (July 26, 2019 - August 5, 2019) in Bat Islands.

Days	Season	Cost	Date	Hotel (Lodging)	Restaurants	Boat	Ground Transportation	Guides	Total
6	Low	High	07/26/19 - 08/01/19	$2,373.00	$510.00	$1,725.00	$192.00	$345.00	**$5,145.00**
7	Low	High	07/26/19 - 08/02/19	$2,768.50	$595.00	$2,012.50	$219.00	$402.50	**$5,997.50**
8	Low	High	07/26/19 - 08/03/19	$3,164.00	$680.00	$2,300.00	$246.00	$460.00	**$6,850.00**
9	Low	High	07/26/19 - 08/04/19	$3,559.50	$765.00	$2,587.50	$292.00	$517.50	**$7,721.50**
10	Low	High	07/26/19 - 08/05/19	$3,955.00	$850.00	$2,875.00	$328.00	$575.00	**$8,583.00**

Table A11. The low costs of one angler visiting Costa Rica for six to ten days during the high season (January 13, 2020 - January 23, 2020) in Bat Islands.

Days	Season	Cost	Date	Hotel (Lodging)	Restaurants	Boat	Ground Transportation	Guides	Total
6	High	Low	01/13/20-01/19/20	$164.72	$354.00	$1,200.00	$377.00	$120.00	**$2,215.72**
7	High	Low	01/13/20-01/20/20	$189.84	$413.00	$1,400.00	$381.00	$140.00	**$2,523.84**
8	High	Low	01/13/20-01/21/20	$214.70	$472.00	$1,600.00	$444.00	$160.00	**$2,890.70**
9	High	Low	01/13/20-01/22/20	$239.56	$531.00	$1,800.00	$498.00	$180.00	**$3,248.56**
10	High	Low	01/13/20-01/23/20	$270.07	$590.00	$2,000.00	$552.00	$200.00	**$3,612.07**

Table A12. The high costs of one angler visiting Costa Rica for six to ten days during the high season (January 13, 2020 - January 23, 2020) in Bat Islands.

Days	Season	Cost	Date	Hotel (Lodging)	Restaurants	Boat	Ground Transportation	Guides	Total
6	High	High	01/13/20-01/19/20	$1,670.14	$510.00	$1,725.00	$5,368.00	$345.00	**$9,618.14**
7	High	High	01/13/20-01/20/20	$2,046.43	$595.00	$2,012.50	$5,370.00	$402.50	**$10,426.43**
8	High	High	01/13/20-01/21/20	$2,352.66	$680.00	$2,300.00	$6,265.00	$460.00	**$12,057.66**
9	High	High	01/13/20-01/22/20	$2,634.03	$765.00	$2,587.50	$7,160.00	$517.50	**$13,664.03**
10	High	High	01/13/20-01/23/20	$2,791.10	$850.00	$2,875.00	$8,054.00	$575.00	**$15,145.10**

Table A13. The low costs of one scuba diver visiting Costa Rica for six to ten days during the low season (July 26, 2019 - August 5, 2019) in Papagayo.

Days	Season	Cost	Date	Hotel (Lodging)	Restaurants	Scuba Diving (Daily Rates)	Ground Transportation	Guides	Total
6	Low	Low	07/26/19-08/01/19	$81.36	$354.00	$1,170.00	$12.00	$117.00	$1,734.36
7	Low	Low	07/26/19-08/02/19	$94.92	$413.00	$1,365.00	$12.00	$136.50	$2,021.42
8	Low	Low	07/26/19-08/03/19	$108.48	$472.00	$1,560.00	$14.00	$156.00	$2,310.48
9	Low	Low	07/26/19-08/04/19	$122.04	$531.00	$1,755.00	$16.00	$175.50	$2,599.54
10	Low	Low	07/26/19-08/05/19	$135.60	$590.00	$1,950.00	$20.00	$195.00	$2,890.60

Table A14. The high costs of one scuba diver visiting Costa Rica for six to ten days during the low season (July 26, 2019 - August 5, 2019) in Papagayo.

Days	Season	Cost	Date	Hotel (Lodging)	Restaurants	Scuba Diving (Daily Rates)	Ground Transportation	Guides	Total
6	Low	High	07/26/19-08/01/19	$2,373.00	$510.00	$1,320.00	$192.00	$264.00	$4,659.00
7	Low	High	07/26/19-08/02/19	$2,768.50	$595.00	$1,540.00	$219.00	$308.00	$5,430.50
8	Low	High	07/26/19-08/03/19	$3,164.00	$680.00	$1,760.00	$246.00	$352.00	$6,202.00
9	Low	High	07/26/19-08/04/19	$3,559.50	$765.00	$1,980.00	$292.00	$396.00	$6,992.50
10	Low	High	07/26/19-08/05/19	$3,955.00	$850.00	$2,200.00	$328.00	$440.00	$7,773.00

Table A15. The low costs of one scuba diver visiting Costa Rica for six to ten days during the high season (January 13, 2020 - January 23, 2020) in Papagayo.

Days	Season	Cost	Date	Hotel (Lodging)	Restaurants	Scuba Diving (Daily Rates)	Ground Transportation	Guides	Total
6	High	Low	01/13/20-01/19/20	$164.72	$354.00	$1,170.00	$377.00	$117.00	$2,182.72
7	High	Low	01/13/20-01/20/20	$189.84	$413.00	$1,365.00	$381.00	$136.50	$2,485.34
8	High	Low	01/13/20-01/21/20	$214.70	$472.00	$1,560.00	$444.00	$156.00	$2,846.70
9	High	Low	01/13/20-01/22/20	$239.56	$531.00	$1,755.00	$498.00	$175.50	$3,199.06
10	High	Low	01/13/20-01/23/20	$270.07	$590.00	$1,950.00	$552.00	$195.00	$3,557.07

Table A16. The high costs of one scuba diver visiting Costa Rica for six to ten days during the high season (January 13, 2020 - January 23, 2020) in Papagayo.

Days	Season	Cost	Date	Hotel (Lodging)	Restaurants	Scuba Diving (Daily Rates)	Ground Transportation	Guides	Total
6	High	High	01/13/20-01/19/20	$1,670.14	$510.00	$1,320.00	$5,367.00	$264.00	$9,131.14
7	High	High	01/13/20-01/20/20	$2,046.43	$595.00	$1,540.00	$5,370.00	$308.00	$9,859.43
8	High	High	01/13/20-01/21/20	$2,352.66	$680.00	$1,760.00	$6,265.00	$352.00	$11,409.66
9	High	High	01/13/20-01/22/20	$2,634.03	$765.00	$1,980.00	$7,160.00	$396.00	$12,935.03
10	High	High	01/13/20-01/23/20	$2,791.10	$850.00	$2,200.00	$8,054.00	$440.00	$14,335.10

Table A17. The low costs of one scuba diver visiting Costa Rica for six to ten days during the low season (July 26, 2019 - August 5, 2019) in Catalinas.

Days	Season	Cost	Date	Hotel (Lodging)	Restaurants	Scuba Diving (Daily Rates)	Ground Transportation	Guides	Total
6	Low	Low	07/26/19-08/01/19	$81.36	$354.00	$1,860.00	$12.00	$186.00	$2,493.36
7	Low	Low	07/26/19-08/02/19	$94.92	$413.00	$2,170.00	$12.00	$217.00	$2,906.92
8	Low	Low	07/26/19-08/03/19	$108.48	$472.00	$2,480.00	$14.00	$248.00	$3,322.48
9	Low	Low	07/26/19-08/04/19	$122.04	$531.00	$2,790.00	$16.00	$279.00	$3,738.04
10	Low	Low	07/26/19-08/05/19	$135.60	$590.00	$3,100.00	$20.00	$310.00	$4,155.60

Table A18. The high costs of one scuba diver visiting Costa Rica for six to ten days during the low season (July 26, 2019 - August 5, 2019) in Catalinas.

Days	Season	Cost	Date	Hotel (Lodging)	Restaurants	Scuba Diving (Daily Rates)	Ground Transportation	Guides	Total
6	Low	High	07/26/19-08/01/19	$2,373.00	$510.00	$2,010.00	$192.00	$402.00	$5,487.00
7	Low	High	07/26/19-08/02/19	$2,768.50	$595.00	$2,345.00	$219.00	$469.00	$6,396.50
8	Low	High	07/26/19-08/03/19	$3,164.00	$680.00	$2,680.00	$246.00	$536.00	$7,306.00
9	Low	High	07/26/19-08/04/19	$3,559.50	$765.00	$3,015.00	$292.00	$603.00	$8,234.50
10	Low	High	07/26/19-08/05/19	$3,955.00	$850.00	$3,350.00	$328.00	$670.00	$9,153.00

Table A19. The low costs of one scuba diver visiting Costa Rica for six to ten days during the high season (January 13, 2020 - January 23, 2020) in Catalinas.

Days	Season	Cost	Date	Hotel (Lodging)	Restaurants	Scuba Diving (Daily Rates)	Ground Transportation	Guides	Total
6	High	Low	01/13/20-01/19/20	$164.72	$354.00	$1,860.00	$377.00	$186.00	$2,941.72
7	High	Low	01/13/20-01/20/20	$189.84	$413.00	$2,170.00	$381.00	$217.00	$3,370.84
8	High	Low	01/13/20-01/21/20	$214.70	$472.00	$2,480.00	$444.00	$248.00	$3,858.70
9	High	Low	01/13/20-01/22/20	$239.56	$531.00	$2,790.00	$498.00	$279.00	$4,337.56
10	High	Low	01/13/20-01/23/20	$270.07	$590.00	$3,100.00	$552.00	$310.00	$4,822.07

Table A20. The high costs of one scuba diver visiting Costa Rica for six to ten days during the high season (January 13, 2020 - January 23, 2020) in Catalinas.

Days	Season	Cost	Date	Hotel (Lodging)	Restaurants	Scuba Diving (Daily Rates)	Ground Transportation	Guides	Total
6	High	High	01/13/20-01/19/20	$1,670.14	$510.00	$2,010.00	$5,368.00	$402.00	$9,960.14
7	High	High	01/13/20-01/20/20	$2,046.43	$595.00	$2,345.00	$5,370.00	$469.00	$10,825.43
8	High	High	01/13/20-01/21/20	$2,352.66	$680.00	$2,680.00	$6,265.00	$536.00	$12,513.66
9	High	High	01/13/20-01/22/20	$2,634.03	$765.00	$3,015.00	$7,160.00	$603.00	$14,177.03
10	High	High	01/13/20-01/23/20	$2,791.10	$850.00	$3,350.00	$8,054.00	$670.00	$15,715.10

Table A21. The low costs of one scuba diver visiting Costa Rica for six to ten days during the low season (July 26, 2019 - August 5, 2019) in Bat Islands.

Days	Season	Cost	Date	Hotel (Lodging)	Restaurants	Scuba Diving (Daily Rates)	Ground Transportation	Guides	Total
6	Low	Low	07/26/19-08/01/19	$81.36	$354.00	$1,350.00	$12.00	$135.00	$1,932.36
7	Low	Low	07/26/19-08/02/19	$94.92	$413.00	$1,575.00	$12.00	$157.50	$2,252.42
8	Low	Low	07/26/19-08/03/19	$108.48	$472.00	$1,800.00	$14.00	$180.00	$2,574.48
9	Low	Low	07/26/19-08/04/19	$122.04	$531.00	$2,025.00	$16.00	$202.50	$2,896.54
10	Low	Low	07/26/19-08/05/19	$135.60	$590.00	$2,250.00	$20.00	$225.00	$3,220.60

Table A22. The high costs of one scuba diver visiting Costa Rica for six to ten days during the low season (July 26, 2019 - August 5, 2019) in Bat Islands.

Days	Season	Cost	Date	Hotel (Lodging)	Restaurants	Scuba Diving (Daily Rates)	Ground Transportation	Guides	Total
6	Low	High	07/26/19-08/01/19	$2,373.00	$510.00	$1,500.00	$192.00	$300.00	$4,875.00
7	Low	High	07/26/19-08/02/19	$2,768.50	$595.00	$1,750.00	$219.00	$350.00	$5,682.50
8	Low	High	07/26/19-08/03/19	$3,164.00	$680.00	$2,000.00	$246.00	$400.00	$6,490.00
9	Low	High	07/26/19-08/04/19	$3,559.50	$765.00	$2,250.00	$292.00	$450.00	$7,316.50
10	Low	High	07/26/19-08/05/19	$3,955.00	$850.00	$2,500.00	$328.00	$500.00	$8,133.00

Table A23. The low costs of one scuba diver visiting Costa Rica for six to ten days during the high season (January 13, 2020 - January 23, 2020) in Bat Islands.

Days	Season	Cost	Date	Hotel (Lodging)	Restaurants	Scuba Diving (Daily Rates)	Ground Transportation	Guides	Total
6	High	Low	01/13/20-01/19/20	$164.72	$354.00	$1,350.00	$377.00	$135.00	$2,380.72
7	High	Low	01/13/20-01/20/20	$189.84	$413.00	$1,575.00	$381.00	$157.50	$2,716.34
8	High	Low	01/13/20-01/21/20	$214.70	$472.00	$1,800.00	$444.00	$180.00	$3,110.70
9	High	Low	01/13/20-01/22/20	$239.56	$531.00	$2,025.00	$498.00	$202.50	$3,496.06
10	High	Low	01/13/20-01/23/20	$270.07	$590.00	$2,250.00	$552.00	$225.00	$3,887.07

Table A24. The high costs of one scuba diver visiting Costa Rica for six to ten days during the high season (January 13, 2020 - January 23, 2020) in Bat Islands.

Days	Season	Cost	Date	Hotel (Lodging)	Restaurants	Scuba Diving (Daily Rates)	Ground Transportation	Guides	Total
6	High	High	01/13/20-01/19/20	$1,670.14	$510.00	$1,500.00	$5,368.00	$300.00	$9,348.14
7	High	High	01/13/20-01/20/20	$2,046.43	$595.00	$1,750.00	$5,370.00	$350.00	$10,111.43
8	High	High	01/13/20-01/21/20	$2,352.66	$680.00	$2,000.00	$6,265.00	$400.00	$11,697.66
9	High	High	01/13/20-01/22/20	$2,634.03	$765.00	$2,250.00	$7,160.00	$450.00	$13,259.03
10	High	High	01/13/20-01/23/20	$2,791.10	$850.00	$2,500.00	$8,054.00	$500.00	$14,695.10

THE 13% SALES TAX FOR THE AMENITIES FOR ANGLERS AND SCUBA DIVERS

Table A25. The 13% sales tax from the low cost of each amenity of one angler visiting Costa Rica for six to ten days during the low season (July 26, 2019 - August 5, 2019) in Papagayo.

Days	Season	Cost	Date	Hotel (Lodging)	Restaurants	Boat	Ground Transportation	Guides	Total
6	Low	Low	07/26/19 - 08/01/19	$10.58	$46.02	$156.00	$1.56	$15.60	$229.76
7	Low	Low	07/26/19 - 08/02/19	$12.34	$53.69	$182.00	$1.56	$18.20	$267.79
8	Low	Low	07/26/19 - 08/03/19	$14.10	$61.36	$208.00	$1.82	$20.80	$306.08
9	Low	Low	07/26/19 - 08/04/19	$15.87	$69.03	$234.00	$2.08	$23.40	$344.38
10	Low	Low	07/26/19 - 08/05/19	$17.63	$76.70	$260.00	$2.60	$26.00	$382.93

Table A26. The 13% sales tax from the high cost of each amenity of one angler visiting Costa Rica for six to ten days during the low season (July 26, 2019 - August 5, 2019) in Papagayo.

Days	Season	Cost	Date	Hotel (Lodging)	Restaurants	Boat	Ground Transportation	Guides	Total
6	Low	High	07/26/19 - 08/01/19	$308.49	$66.30	$224.25	$24.95	$44.85	$668.84
7	Low	High	07/26/19 - 08/02/19	$359.91	$77.35	$261.63	$28.47	$52.33	$779.68
8	Low	High	07/26/19 - 08/03/19	$411.32	$88.40	$299.00	$31.98	$59.80	$890.50
9	Low	High	07/26/19 - 08/04/19	$462.74	$99.45	$336.38	$37.96	$67.28	$1,003.80
10	Low	High	07/26/19 - 08/05/19	$514.15	$110.50	$373.75	$42.64	$74.75	$1,115.79

Table A27. The 13% sales tax from the low cost of each amenity of one angler visiting Costa Rica for six to ten days during the high season (January 13, 2020 - January 23, 2020) in Papagayo.

Days	Season	Cost	Date	Hotel (Lodging)	Restaurants	Boat	Ground Transportation	Guides	Total
6	High	Low	01/13/20-01/19/20	$21.41	$46.02	$156.00	$49.01	$15.60	$288.04
7	High	Low	01/13/20-01/20/20	$24.68	$53.69	$182.00	$49.53	$18.20	$328.10
8	High	Low	01/13/20-01/21/20	$27.91	$61.36	$208.00	$57.72	$20.80	$375.79
9	High	Low	01/13/20-01/22/21	$31.14	$69.03	$234.00	$64.74	$23.40	$422.31
10	High	Low	01/13/20-01/23/20	$35.11	$76.70	$260.00	$71.76	$26.00	$469.57

Table A28. The 13% sales tax from the high cost of each amenity of one angler visiting Costa Rica for six to ten days during the high season (January 13, 2020 - January 23, 2020) Papagayo.

Days	Season	Cost	Date	Hotel (Lodging)	Restaurants	Boat	Ground Transportation	Guides	Total
6	High	High	01/13/20-01/19/20	$217.12	$66.30	$224.25	$697.84	$44.85	$1,250.36
7	High	High	01/13/20-01/20/20	$266.04	$77.35	$261.63	$698.10	$52.33	$1,355.44
8	High	High	01/13/20-01/21/20	$305.85	$88.40	$299.00	$814.45	$59.80	$1,567.50
9	High	High	01/13/20-01/22/21	$342.42	$99.45	$336.38	$930.80	$67.28	$1,776.33
10	High	High	01/13/20-01/23/20	$362.84	$110.50	$373.75	$1,047.02	$74.75	$1,968.86

Table A29. The 13% sales tax from the low cost of each amenity of one angler visiting Costa Rica for six to ten days during the low season (July 26, 2019 - August 5, 2019) in Catalinas.

Days	Season	Cost	Date	Hotel (Lodging)	Restaurants	Boat	Ground Transportation	Guides	Total
6	Low	Low	07/26/19 - 08/01/19	$10.58	$46.02	$156.00	$1.56	$15.60	$229.76
7	Low	Low	07/26/19 - 08/02/19	$12.34	$53.69	$182.00	$1.56	$18.20	$267.79
8	Low	Low	07/26/19 - 08/03/19	$14.10	$61.36	$208.00	$1.82	$20.80	$306.08
9	Low	Low	07/26/19 - 08/04/19	$15.87	$69.03	$234.00	$2.08	$23.40	$344.38
10	Low	Low	07/26/19 - 08/05/19	$17.63	$76.70	$260.00	$2.60	$26.00	$382.93

Table A30. The 13% sales tax from the high cost of each amenity of one angler visiting Costa Rica for six to ten days during the low season (July 26, 2019 - August 5, 2019) in Catalinas.

Days	Season	Cost	Date	Hotel (Lodging)	Restaurants	Boat	Ground Transportation	Guides	Total
6	Low	High	07/26/19 - 08/01/19	$308.49	$66.30	$224.25	$24.95	$44.85	$668.84
7	Low	High	07/26/19 - 08/02/19	$359.91	$77.35	$261.63	$28.47	$52.33	$779.68
8	Low	High	07/26/19 - 08/03/19	$411.32	$88.40	$299.00	$31.98	$59.80	$890.50
9	Low	High	07/26/19 - 08/04/19	$462.74	$99.45	$336.38	$37.96	$67.28	$1,003.80
10	Low	High	07/26/19 - 08/05/19	$514.15	$110.50	$373.75	$42.64	$74.75	$1,115.79

Table A31. The 13% sales tax from the low cost of each amenity of one angler visiting Costa Rica for six to ten days during the high season (January 13, 2020 - January 23, 2020) in Catalinas.

Days	Season	Cost	Date	Hotel (Lodging)	Restaurants	Boat	Ground Transportation	Guides	Total
6	High	Low	01/13/20-01/19/20	$21.41	$46.02	$156.00	$49.01	$15.60	$288.04
7	High	Low	01/13/20-01/20/20	$24.68	$53.69	$182.00	$49.53	$18.20	$328.10
8	High	Low	01/13/20-01/21/20	$27.91	$61.36	$208.00	$57.72	$20.80	$375.79
9	High	Low	01/13/20-01/22/21	$31.14	$69.03	$234.00	$64.74	$23.40	$422.31
10	High	Low	01/13/20-01/23/20	$35.11	$76.70	$260.00	$71.76	$26.00	$469.57

Table A32. The 13% sales tax from the high cost of each amenity of one angler visiting Costa Rica for six to ten days during the high season (January 13, 2020 - January 23, 2020) Catalinas.

Days	Season	Cost	Date	Hotel (Lodging)	Restaurants	Boat	Ground Transportation	Guides	Total
6	High	High	01/13/20-01/19/20	$217.12	$66.30	$224.25	$697.84	$44.85	$1,250.36
7	High	High	01/13/20-01/20/20	$266.04	$77.35	$261.63	$698.10	$52.33	$1,355.44
8	High	High	01/13/20-01/21/20	$305.85	$88.40	$299.00	$814.45	$59.80	$1,567.50
9	High	High	01/13/20-01/22/21	$342.42	$99.45	$336.38	$930.80	$67.28	$1,776.33
10	High	High	01/13/20-01/23/20	$362.84	$110.50	$373.75	$1,047.02	$74.75	$1,968.86

Table A33. The 13% sales tax from the low cost of each amenity of one angler visiting Costa Rica for six to ten days during the low season (July 26, 2019 - August 5, 2019) in Bat Islands.

Days	Season	Cost	Date	Hotel (Lodging)	Restaurants	Boat	Ground Transportation	Guides	Total
6	Low	Low	07/26/19 - 08/01/19	$10.58	$46.02	$156.00	$1.56	$15.60	$229.76
7	Low	Low	07/26/19 - 08/02/19	$12.34	$53.69	$182.00	$1.56	$18.20	$267.79
8	Low	Low	07/26/19 - 08/03/19	$14.10	$61.36	$208.00	$1.82	$20.80	$306.08
9	Low	Low	07/26/19 - 08/04/19	$15.87	$69.03	$234.00	$2.08	$23.40	$344.38
10	Low	Low	07/26/19 - 08/05/19	$17.63	$76.70	$260.00	$2.60	$26.00	$382.93

Table A34. The 13% sales tax from the high cost of each amenity of one angler visiting Costa Rica for six to ten days during the low season (July 26, 2019 - August 5, 2019) in Bat Islands.

Days	Season	Cost	Date	Hotel (Lodging)	Restaurants	Boat	Ground Transportation	Guides	Total
6	Low	High	07/26/19 - 08/01/19	$308.49	$66.30	$224.25	$24.95	$44.85	$668.84
7	Low	High	07/26/19 - 08/02/19	$359.91	$77.35	$261.63	$28.47	$52.33	$779.68
8	Low	High	07/26/19 - 08/03/19	$411.32	$88.40	$299.00	$31.98	$59.80	$890.50
9	Low	High	07/26/19 - 08/04/19	$462.74	$99.45	$336.38	$37.96	$67.28	$1,003.80
10	Low	High	07/26/19 - 08/05/19	$514.15	$110.50	$373.75	$42.64	$74.75	$1,115.79

Table A35. The 13% sales tax from the low cost of each amenity of one angler visiting Costa Rica for six to ten days during the high season (January 13, 2020 - January 23, 2020) in Bat Islands.

Days	Season	Cost	Date	Hotel (Lodging)	Restaurants	Boat	Ground Transportation	Guides	Total
6	High	Low	01/13/20-01/19/20	$21.41	$46.02	$156.00	$49.01	$15.60	$288.04
7	High	Low	01/13/20-01/20/20	$24.68	$53.69	$182.00	$49.53	$18.20	$328.10
8	High	Low	01/13/20-01/21/20	$27.91	$61.36	$208.00	$57.72	$20.80	$375.79
9	High	Low	01/13/20-01/22/21	$31.14	$69.03	$234.00	$64.74	$23.40	$422.31
10	High	Low	01/13/20-01/23/20	$35.11	$76.70	$260.00	$71.76	$26.00	$469.57

Table A36. The 13% sales tax from the high cost of each amenity of one angler visiting Costa Rica for six to ten days during the high season (January 13, 2020 - January 23, 2020) Bat Islands.

Days	Season	Cost	Date	Hotel (Lodging)	Restaurants	Boat	Ground Transportation	Guides	Total
6	High	High	01/13/20-01/19/20	$217.12	$66.30	$224.25	$697.84	$44.85	$1,250.36
7	High	High	01/13/20-01/20/20	$266.04	$77.35	$261.63	$698.10	$52.33	$1,355.44
8	High	High	01/13/20-01/21/20	$305.85	$88.40	$299.00	$814.45	$59.80	$1,567.50
9	High	High	01/13/20-01/22/21	$342.42	$99.45	$336.38	$930.80	$67.28	$1,776.33
10	High	High	01/13/20-01/23/20	$362.84	$110.50	$373.75	$1,047.02	$74.75	$1,968.86

Table A37. The 13% sales tax from the low cost of each amenity of one scuba diver visiting Costa Rica for six to ten days during the low season (July 26, 2019 - August 5, 2019) in Papagayo.

Days	Season	Cost	Date	Hotel (Lodging)	Restaurants	Scuba Diving (Daily Rates)	Ground Transportation	Guides	Total
6	Low	Low	07/26/19 - 08/01/19	$10.58	$46.02	$152.10	$1.56	$15.21	$225.47
7	Low	Low	07/26/19 - 08/02/19	$12.34	$53.69	$177.45	$1.56	$17.75	$262.78
8	Low	Low	07/26/19 - 08/03/19	$14.10	$61.36	$202.80	$1.82	$20.28	$300.36
9	Low	Low	07/26/19 - 08/04/19	$15.87	$69.03	$228.15	$2.08	$22.82	$337.94
10	Low	Low	07/26/19 - 08/05/19	$17.63	$76.70	$253.50	$2.60	$25.35	$375.78

Table A38. The 13% sales tax from the high cost of each amenity of one scuba diver visiting Costa Rica for six to ten days during the low season (July 26, 2019 - August 5, 2019) in Papagayo.

Days	Season	Cost	Date	Hotel (Lodging)	Restaurants	Scuba Diving (Daily Rates)	Ground Transportation	Guides	Total
6	Low	High	07/26/19 - 08/01/19	$308.49	$66.30	$171.60	$24.96	$34.32	$605.67
7	Low	High	07/26/19 - 08/02/19	$359.91	$77.35	$200.20	$28.47	$40.04	$705.97
8	Low	High	07/26/19 - 08/03/19	$411.32	$88.40	$228.80	$31.98	$45.76	$806.26
9	Low	High	07/26/19 - 08/04/19	$462.74	$99.45	$257.40	$37.96	$51.48	$909.03
10	Low	High	07/26/19 - 08/05/19	$514.15	$110.50	$286.00	$42.64	$57.20	$1,010.49

Table A39. The13% sales tax from the low cost of each amenity of one scuba diver visiting Costa Rica for six to ten days during the high season (January 13, 2020 - January 23, 2020) in Papagayo.

Days	Season	Cost	Date	Hotel (Lodging)	Restaurants	Scuba Diving (Daily Rates)	Ground Transportation	Guides	Total
6	High	Low	01/13/20-01/19/20	$21.41	$46.02	$152.10	$49.01	$15.21	$283.75
7	High	Low	01/13/20-01/20/20	$24.68	$53.69	$177.45	$49.53	$17.75	$323.09
8	High	Low	01/13/20-01/21/20	$27.91	$61.36	$202.80	$57.72	$20.28	$370.07
9	High	Low	01/13/20-01/22/20	$31.14	$69.03	$228.15	$64.74	$22.82	$415.88
10	High	Low	01/13/20-01/23/20	$35.11	$76.70	$253.50	$71.76	$25.35	$462.42

Table A40. The 13% sales tax from the high cost of each amenity of one scuba diver visiting Costa Rica for six to ten days during the high season (January 13, 2020 - January 23, 2020) in Papagayo.

Days	Season	Cost	Date	Hotel (Lodging)	Restaurants	Scuba Diving (Daily Rates)	Ground Transportation	Guides	Total
6	High	High	01/13/20-01/19/20	$217.12	$66.30	$171.60	$697.84	$34.32	$1,187.18
7	High	High	01/13/20-01/20/20	$266.04	$77.35	$200.20	$698.10	$40.04	$1,281.73
8	High	High	01/13/20-01/21/20	$305.85	$88.40	$228.80	$814.45	$45.76	$1,483.26
9	High	High	01/13/20-01/22/20	$342.42	$99.45	$257.40	$930.80	$51.48	$1,681.55
10	High	High	01/13/20-01/23/20	$362.84	$110.50	$286.00	$1,047.02	$57.20	$1,863.56

Table A41. The 13% sales tax from the low cost of each amenity of one scuba diver visiting Costa Rica for six to ten days during the low season (July 26, 2019 - August 5, 2019) in Catalinas.

Days	Season	Cost	Date	Hotel (Lodging)	Restaurants	Scuba Diving (Daily Rates)	Ground Transportation	Guides	Total
6	Low	Low	07/26/19 - 08/01/19	$10.58	$46.02	$241.80	$1.56	$24.18	$324.14
7	Low	Low	07/26/19 - 08/02/19	$12.34	$53.69	$282.10	$1.56	$28.21	$377.90
8	Low	Low	07/26/19 - 08/03/19	$14.10	$61.36	$322.40	$1.82	$32.24	$431.92
9	Low	Low	07/26/19 - 08/04/19	$15.87	$69.03	$362.70	$2.08	$36.27	$485.95
10	Low	Low	07/26/19 - 08/05/19	$17.63	$76.70	$403.00	$2.60	$40.30	$540.23

Table A42. The 13% sales tax from the high cost of each amenity of one scuba diver visiting Costa Rica for six to ten days during the low season (July 26, 2019 - August 5, 2019) in Catalinas.

Days	Season	Cost	Date	Hotel (Lodging)	Restaurants	Scuba Diving (Daily Rates)	Ground Transportation	Guides	Total
6	Low	High	07/26/19 - 08/01/19	$308.49	$66.30	$261.30	$24.96	$52.26	$713.31
7	Low	High	07/26/19 - 08/02/19	$359.91	$77.35	$304.85	$28.47	$60.97	$831.55
8	Low	High	07/26/19 - 08/03/19	$411.32	$88.40	$348.40	$31.98	$69.68	$949.78
9	Low	High	07/26/19 - 08/04/19	$462.74	$99.45	$391.95	$37.96	$78.39	$1,070.49
10	Low	High	07/26/19 - 08/05/19	$514.15	$110.50	$435.50	$42.64	$87.10	$1,189.89

Table A43. The 13% sales tax from the low cost of each amenity of one scuba diver visiting Costa Rica for six to ten days during the high season (January 13, 2020 - January 23, 2020) in Catalinas.

Days	Season	Cost	Date	Hotel (Lodging)	Restaurants	Scuba Diving (Daily Rates)	Ground Transportation	Guides	Total
6	High	Low	01/13/20-01/19/20	$21.41	$46.02	$241.80	$49.01	$24.18	$382.42
7	High	Low	01/13/20-01/20/20	$24.68	$53.69	$282.10	$49.53	$28.21	$438.21
8	High	Low	01/13/20-01/21/20	$27.91	$61.36	$322.40	$57.72	$32.24	$501.63
9	High	Low	01/13/20-01/22/20	$31.14	$69.03	$362.70	$64.74	$36.27	$563.88
10	High	Low	01/13/20-01/23/20	$35.11	$76.70	$403.00	$71.76	$40.30	$626.87

Table A44. The 13% sales tax from the high cost of each amenity of one scuba diver visiting Costa Rica for six to ten days during the high season (January 13, 2020 - January 23, 2020) in Catalinas.

Days	Season	Cost	Date	Hotel (Lodging)	Restaurants	Scuba Diving (Daily Rates)	Ground Transportation	Guides	Total
6	High	High	01/13/20-01/19/20	$217.12	$66.30	$261.30	$697.84	$52.26	$1,294.82
7	High	High	01/13/20-01/20/20	$266.04	$77.35	$304.85	$698.10	$60.97	$1,407.31
8	High	High	01/13/20-01/21/20	$305.85	$88.40	$348.40	$814.45	$69.68	$1,626.78
9	High	High	01/13/20-01/22/20	$342.42	$99.45	$391.95	$930.80	$78.39	$1,843.01
10	High	High	01/13/20-01/23/20	$362.84	$110.50	$435.50	$1,047.02	$87.10	$2,042.96

Table A45. The 13% sales tax from the low cost of each amenity of one scuba diver visiting Costa Rica for six to ten days during the low season (July 26, 2019 - August 5, 2019) in Bat Islands.

Days	Season	Cost	Date	Hotel (Lodging)	Restaurants	Scuba Diving (Daily Rates)	Ground Transportation	Guides	Total
6	Low	Low	07/26/19 - 08/01/19	$10.58	$46.02	$175.50	$1.56	$17.55	$251.21
7	Low	Low	07/26/19 - 08/02/19	$12.34	$53.69	$204.75	$1.56	$20.48	$292.81
8	Low	Low	07/26/19 - 08/03/19	$14.10	$61.36	$234.00	$1.82	$23.40	$334.68
9	Low	Low	07/26/19 - 08/04/19	$15.87	$69.03	$263.25	$2.08	$26.33	$376.55
10	Low	Low	07/26/19 - 08/05/19	$17.63	$76.70	$292.50	$2.60	$29.25	$418.68

Table A46. The 13% sales tax from the high cost of each amenity of one scuba diver visiting Costa Rica for six to ten days during the low season (July 26, 2019 - August 5, 2019) in Bat Islands.

Days	Season	Cost	Date	Hotel (Lodging)	Restaurants	Scuba Diving (Daily Rates)	Ground Transportation	Guides	Total
6	Low	High	07/26/19 - 08/01/19	$308.49	$66.30	$195.00	$24.96	$39.00	$633.75
7	Low	High	07/26/19 - 08/02/19	$359.91	$77.36	$227.50	$28.47	$45.50	$738.74
8	Low	High	07/26/19 - 08/03/19	$411.32	$88.40	$260.00	$31.98	$52.00	$843.70
9	Low	High	07/26/19 - 08/04/19	$462.74	$99.45	$292.50	$37.96	$58.50	$951.15
10	Low	High	07/26/19 - 08/05/19	$514.15	$110.50	$325.00	$42.64	$65.00	$1,057.29

Table A47. The 13% sales tax from the low cost of each amenity of one scuba diver visiting Costa Rica for six to ten days during the high season (January 13, 2020 - January 23, 2020) in Bat Islands.

Days	Season	Cost	Date	Hotel (Lodging)	Restaurants	Scuba Diving (Daily Rates)	Ground Transportation	Guides	Total
6	High	Low	01/13/20-01/19/20	$21.41	$46.02	$175.50	$49.01	$17.55	$309.49
7	High	Low	01/13/20-01/20/20	$24.68	$53.69	$204.75	$49.53	$20.48	$353.12
8	High	Low	01/13/20-01/21/20	$27.91	$61.36	$234.00	$57.72	$23.40	$404.39
9	High	Low	01/13/20-01/22/20	$31.14	$69.03	$263.25	$64.74	$26.33	$454.49
10	High	Low	01/13/20-01/23/20	$35.11	$76.70	$292.50	$71.76	$29.25	$505.32

Table A48. The 13% sales tax from the high cost of each amenity of one scuba diver visiting Costa Rica for six to ten days during the high season (January 13, 2020 - January 23, 2020) in Bat Islands.

Days	Season	Cost	Date	Hotel (Lodging)	Restaurants	Scuba Diving (Daily Rates)	Ground Transportation	Guides	Total
6	High	High	01/13/20-01/19/20	$217.12	$66.30	$195.00	$697.84	$39.00	$1,215.26
7	High	High	01/13/20-01/20/20	$266.04	$77.35	$227.50	$698.10	$45.50	$1,314.49
8	High	High	01/13/20-01/21/20	$305.85	$88.40	$260.00	$814.45	$52.00	$1,520.70
9	High	High	01/13/20-01/22/20	$342.42	$99.45	$292.50	$930.80	$58.50	$1,723.67
10	High	High	01/13/20-01/23/20	$362.84	$110.50	$325.00	$1,047.02	$65.00	$1,910.36

ADDITIONAL ANGLERS AND SCUBA DIVERS, ANNUAL COST AND TOTAL COST FOR PAPAGAYO AT 2.75% INTEREST RATE - **HIGH SEASON, LOW COST**

Table A49. The total number of additional anglers and scuba divers needed to break - even, in one year, for $8.6 million during the high season at low cost in Papagayo using 2.75% interest rate.

# Day	Anglers (Total Tax -	Scuba Divers (Total Tax-13%) (Papagayo)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 1 yr. (2.75%)	Total Cost with Interest (2.75%)
6	$288.04	$283.75	$8,600,000	30,678	31,141	$8,836,500	$8,836,500
7	$328.10	$323.09	$8,600,000	26,932	27,350	$8,836,500	$8,836,500
8	$375.79	$370.07	$8,600,000	23,514	23,878	$8,836,500	$8,836,500
9	$422.31	$415.88	$8,600,000	20,924	21,248	$8,836,500	$8,836,500
10	$469.57	$462.42	$8,600,000	18,818	19,109	$8,836,500	$8,836,500

Table A50. The total number of additional anglers and scuba divers needed to break - even, in five years, for $8.6 million during the high season at low cost in Papagayo using 2.75% interest rate.

# Day	Anglers (Total Tax -	Scuba Divers (Total Tax-13%) (Papagayo)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 5 yrs. (2.75%)	Total Cost with Interest (2.75%)
6	$288.04	$283.75	$8,600,000	6,473	6,571	$1,864,466	$9,322,328
7	$328.10	$323.09	$8,600,000	5,683	5,771	$1,864,466	$9,322,328
8	$375.79	$370.07	$8,600,000	4,961	5,038	$1,864,466	$9,322,328
9	$422.31	$415.88	$8,600,000	4,415	4,483	$1,864,466	$9,322,328
10	$469.57	$462.42	$8,600,000	3,971	4,032	$1,864,466	$9,322,328

Table A51. The total number of additional anglers and scuba divers needed to break - even, in ten years, for $8.6 million during the high season at low cost in Papagayo using 2.75% interest rate.

# Days	Anglers (Total Tax -13%)	Scuba Divers (Total Tax-13%) (Papagayo)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 10 yrs. (2.75%)	Total Cost with Interest (2.75%)
6	$288.04	$283.75	$8,600,000	3,456	3,508	$995,362	$9,953,616
7	$328.10	$323.09	$8,600,000	3,034	3,081	$995,362	$9,953,616
8	$375.79	$370.07	$8,600,000	2,649	2,690	$995,362	$9,953,616
9	$422.31	$415.88	$8,600,000	2,357	2,393	$995,362	$9,953,616
10	$469.57	$462.42	$8,600,000	2,120	2,153	$995,362	$9,953,616

Table A52. The total number of additional anglers and scuba divers needed to break - even, in fifteen years, for $8.6 million during the high season at low cost in Papagayo using 2.75% interest rate.

# Days	Anglers (Total Tax -	Scuba Divers (Total Tax-13%) (Papagayo)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 15 yrs. (2.75%)	Total Cost with Interest (2.75%)
6	$288.04	$283.75	$8,600,000	2,456	2,493	$707,429	$10,611,433
7	$328.10	$323.09	$8,600,000	2,156	2,190	$707,429	$10,611,433
8	$375.79	$370.07	$8,600,000	1,883	1,912	$707,429	$10,611,433
9	$422.31	$415.88	$8,600,000	1,675	1,701	$707,429	$10,611,433
10	$469.57	$462.42	$8,600,000	1,507	1,530	$707,429	$10,611,433

Table A53. The total number of additional anglers and scuba divers needed to break - even, in twenty years, for $8.6 million during the high season at low cost in Papagayo using 2.75% interest rate.

# Days	Anglers (Total Tax -	Scuba Divers (Total Tax-13%) (Papagayo)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 20 yrs. (2.75%)	Total Cost with Interest (2.75%)
6	$288.04	$283.75	$8,600,000	1,961	1,990	$564,777	$11,295,538
7	$328.10	$323.09	$8,600,000	1,721	1,748	$564,777	$11,295,538
8	$375.79	$370.07	$8,600,000	1,503	1,526	$564,777	$11,295,538
9	$422.31	$415.88	$8,600,000	1,337	1,358	$564,777	$11,295,538
10	$469.57	$462.42	$8,600,000	1,203	1,221	$564,777	$11,295,538

ADDITIONAL ANGLERS AND SCUBA DIVERS, ANNUAL COST AND TOTAL COST FOR PAPAGAYO AT 2.75% INTEREST RATE - **HIGH SEASON, HIGH COST**

Table A54. The total number of additional anglers and scuba divers needed to break - even, in one year, for $8.6 million during the high season at high cost in Papagayo using 2.75% interest rate.

# Day	Anglers (Total Tax-	Scuba Divers (Total Tax- 13%) (Papagayo)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 1 yr. (2.75%)	Total Cost with Interest (2.75%)
6	$1,250.36	$1,187.18	$8,600,000	7,067	7,443	$8,836,500	$8,836,500
7	$1,355.44	$1,281.73	$8,600,000	6,519	6,894	$8,836,500	$8,836,500
8	$1,567.50	$1,483.26	$8,600,000	5,637	5,958	$8,836,500	$8,836,500
9	$1,776.33	$1,681.55	$8,600,000	4,975	5,255	$8,836,500	$8,836,500
10	$1,968.86	$1,863.56	$8,600,000	4,488	4,742	$8,836,500	$8,836,500

Table A55. The total number of additional anglers and scuba divers needed to break - even, in five years, for $8.6 million during the high season at high cost in Papagayo using 2.75% interest rate.

# Day	Anglers (Total Tax-	Scuba Divers (Total Tax- 13%) (Papagayo)	Cost to Sink	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 5 yrs. (2.75%)	Total Cost with Interest (2.75%)
6	$1,250.36	$1,187.18	$8,600,000	1,491	1,571	$1,864,466	$9,322,328
7	$1,355.44	$1,281.73	$8,600,000	1,376	1,455	$1,864,466	$9,322,328
8	$1,567.50	$1,483.26	$8,600,000	1,189	1,257	$1,864,466	$9,322,328
9	$1,776.33	$1,681.55	$8,600,000	1,050	1,109	$1,864,466	$9,322,328
10	$1,968.86	$1,863.56	$8,600,000	947	1,000	$1,864,466	$9,322,328

Table A56. The total number of additional anglers and scuba divers needed to break - even, in ten years, for $8.6 million during the high season at high cost in Papagayo using 2.75% interest rate.

# Days	Anglers (Total Tax-13%)	Scuba Divers (Total Tax-13%) (Papagayo)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 10 yrs. (2.75%)	Total Cost with Interest (2.75%)
6	$1,250.36	$1,187.18	$8,600,000	796	838	$995,362	$9,953,616
7	$1,355.44	$1,281.73	$8,600,000	734	777	$995,362	$9,953,616
8	$1,567.50	$1,483.26	$8,600,000	635	671	$995,362	$9,953,616
9	$1,776.33	$1,681.55	$8,600,000	560	592	$995,362	$9,953,616
10	$1,968.86	$1,863.56	$8,600,000	506	534	$995,362	$9,953,616

Table A57. The total number of additional anglers and scuba divers needed to break - even, in fifteen years, for $8.6 million during the high season at high cost in Papagayo using 2.75% interest rate.

# Days	Anglers (Total Tax-13%)	Scuba Divers (Total Tax-13%) (Papagayo)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 15 yrs. (2.75%)	Total Cost with Interest (2.75%)
6	$1,250.36	$1,187.18	$8,600,000	566	596	$707,429	$10,611,433
7	$1,355.44	$1,281.73	$8,600,000	522	552	$707,429	$10,611,433
8	$1,567.50	$1,483.26	$8,600,000	451	477	$707,429	$10,611,433
9	$1,776.33	$1,681.55	$8,600,000	398	421	$707,429	$10,611,433
10	$1,968.86	$1,863.56	$8,600,000	359	380	$707,429	$10,611,433

Table A58. The total number of additional anglers and scuba divers needed to break - even, in twenty years, for $8.6 million during the high season at high cost in Papagayo using 2.75% interest rate.

# Days	Anglers (Total Tax-13%)	Scuba Divers (Total Tax-13%) (Papagayo)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 20 yrs. (2.75%)	Total Cost with Interest (2.75%)
6	$1,250.36	$1,187.18	$8,600,000	452	476	$564,777	$11,295,538
7	$1,355.44	$1,281.73	$8,600,000	417	441	$564,777	$11,295,538
8	$1,567.50	$1,483.26	$8,600,000	360	381	$564,777	$11,295,538
9	$1,776.33	$1,681.55	$8,600,000	318	336	$564,777	$11,295,538
10	$1,968.86	$1,863.56	$8,600,000	287	303	$564,777	$11,295,538

ADDITIONAL ANGLERS AND SCUBA DIVERS, ANNUAL COST AND TOTAL COST FOR PAPAGAYO AT 2.75% INTEREST RATE - **LOW SEASON, LOW COST**

Table A59. The total number of additional anglers and scuba divers needed to break-even, in one year, for $8.6 million during the low season at low cost in Papagayo using 2.75% interest rate.

# Day	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Papagayo)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 1 yr. (2.75%)	Total Cost with Interest (2.75%)
6	$229.76	$225.47	$8,600,000	38,460	39,192	$8,836,500	$8,836,500
7	$267.79	$262.78	$8,600,000	32,998	33,626	$8,836,500	$8,836,500
8	$306.08	$300.36	$8,600,000	28,870	29,419	$8,836,500	$8,836,500
9	$344.38	$337.94	$8,600,000	25,660	26,148	$8,836,500	$8,836,500
10	$382.93	$375.78	$8,600,000	23,076	23,515	$8,836,500	$8,836,500

Table A60. The total number of additional anglers and scuba divers needed to break - even, in five years, for $8.6 million during the low season at low cost in Papagayo using 2.75% interest rate.

# Day	Anglers (Total Tax-	Scuba Divers (Total Tax-13%)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 5 yrs. (2.75%)	Total Cost with Interest (2.75%)
6	$229.76	$225.47	$8,600,000	8,115	8,269	$1,864,466	$9,322,328
7	$267.79	$262.78	$8,600,000	6,962	7,095	$1,864,466	$9,322,328
8	$306.08	$300.36	$8,600,000	6,091	6,207	$1,864,466	$9,322,328
9	$344.38	$337.94	$8,600,000	5,414	5,517	$1,864,466	$9,322,328
10	$382.93	$375.78	$8,600,000	4,869	4,962	$1,864,466	$9,322,328

Table A61. The total number of additional anglers and scuba divers needed to break - even, in ten years, for $8.6 million during the low season at low cost in Papagayo using 2.75% interest rate.

# Days	Anglers (Total Tax-13%)	Scuba Divers (Total Tax-13%) (Papagayo)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 10 yrs. (2.75%)	Total Cost with Interest (2.75%)
6	$229.76	$225.47	$8,600,000	4,332	4,415	$995,362	$9,953,616
7	$267.79	$262.78	$8,600,000	3,717	3,788	$995,362	$9,953,616
8	$306.08	$300.36	$8,600,000	3,252	3,314	$995,362	$9,953,616
9	$344.38	$337.94	$8,600,000	2,890	2,945	$995,362	$9,953,616
10	$382.93	$375.78	$8,600,000	2,599	2,649	$995,362	$9,953,616

Table A62. The total number of additional anglers and scuba divers needed to break - even, in fifteen years, for $8.6 million during the low season at low cost in Papagayo using 2.75% interest rate.

# Days	Anglers (Total Tax-13%)	Scuba Divers (Total Tax-13%) (Papagayo)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 15 yrs. (2.75%)	Total Cost with Interest (2.75%)
6	$229.76	$225.47	$8,600,000	3,079	3,138	$707,429	$10,611,433
7	$267.79	$262.78	$8,600,000	2,642	2,692	$707,429	$10,611,433
8	$306.08	$300.36	$8,600,000	2,311	2,355	$707,429	$10,611,433
9	$344.38	$337.94	$8,600,000	2,054	2,093	$707,429	$10,611,433
10	$382.93	$375.78	$8,600,000	1,847	1,883	$707,429	$10,611,433

Table A63. The total number of additional anglers and scuba divers needed to break - even, in twenty years, for $8.6 million during the low season at low cost in Papagayo using 2.75% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Papagayo)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 20 yrs. (2.75%)	Total Cost with Interest (2.75%)
6	$229.76	$225.47	$8,600,000	2,458	2,505	$564,777	$11,295,538
7	$267.79	$262.78	$8,600,000	2,109	2,149	$564,777	$11,295,538
8	$306.08	$300.36	$8,600,000	1,845	1,880	$564,777	$11,295,538
9	$344.38	$337.94	$8,600,000	1,640	1,671	$564,777	$11,295,538
10	$382.93	$375.78	$8,600,000	1,475	1,503	$564,777	$11,295,538

ADDITIONAL ANGLERS AND SCUBA DIVERS, ANNUAL COST AND TOTAL COST FOR PAPAGAYO AT 2.75% INTEREST RATE - **LOW SEASON, HIGH COST**

Table A64. The total number of additional anglers and scuba divers needed to break-even, in one year, for $8.6 million during the low season at high cost in Papagayo using 2.75% interest rate.

# Day	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Papagayo)	Cost to Sink	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 1 yr. (2.75%)	Total Cost with Interest (2.75%)
6	$668.84	$605.67	$8,600,000	13,212	14,590	$8,836,500	$8,836,500
7	$779.68	$705.97	$8,600,000	11,333	12,517	$8,836,500	$8,836,500
8	$890.50	$806.26	$8,600,000	9,923	10,960	$8,836,500	$8,836,500
9	$1,003.80	$909.03	$8,600,000	8,803	9,721	$8,836,500	$8,836,500
10	$1,115.79	$1,010.49	$8,600,000	7,920	8,745	$8,836,500	$8,836,500

Table A65. The total number of additional anglers and scuba divers needed to break - even, in five years, for $8.6 million during the low season at high cost in Papagayo using 2.75% interest rate.

# Day	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Papagayo)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 5 yrs. (2.75%)	Total Cost with Interest (2.75%)
6	$668.84	$605.67	$8,600,000	2,788	3,078	$1,864,466	$9,322,328
7	$779.68	$705.97	$8,600,000	2,391	2,641	$1,864,466	$9,322,328
8	$890.50	$806.26	$8,600,000	2,094	2,312	$1,864,466	$9,322,328
9	$1,003.80	$909.03	$8,600,000	1,857	2,051	$1,864,466	$9,322,328
10	$1,115.79	$1,010.49	$8,600,000	1,671	1,845	$1,864,466	$9,322,328

Table A66. The total number of additional anglers and scuba divers needed to break - even, in ten years, for $8.6 million during the low season at high cost in Papagayo using 2.75% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Papagayo)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 10 yrs. (2.75%)	Total Cost with Interest (2.75%)
6	$668.84	$605.67	$8,600,000	1,488	1,643	$995,362	$9,953,616
7	$779.68	$705.97	$8,600,000	1,277	1,410	$995,362	$9,953,616
8	$890.50	$806.26	$8,600,000	1,118	1,235	$995,362	$9,953,616
9	$1,003.80	$909.03	$8,600,000	992	1,095	$995,362	$9,953,616
10	$1,115.79	$1,010.49	$8,600,000	892	985	$995,362	$9,953,616

Table A67. The total number of additional anglers and scuba divers needed to break - even, in fifteen years, for $8.6 million during the low season at high cost in Papagayo using 2.75% interest rate.

# Days	Anglers (Total Tax-13%)	Scuba Divers (Total Tax-13%) (Papagayo)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 15 yrs. (2.75%)	Total Cost with Interest (2.75%)
6	$668.84	$605.67	$8,600,000	1,058	1,168	$707,429	$10,611,433
7	$779.68	$705.97	$8,600,000	907	1,002	$707,429	$10,611,433
8	$890.50	$806.26	$8,600,000	794	877	$707,429	$10,611,433
9	$1,003.80	$909.03	$8,600,000	705	778	$707,429	$10,611,433
10	$1,115.79	$1,010.49	$8,600,000	634	700	$707,429	$10,611,433

Table A68. The total number of additional anglers and scuba divers needed to break - even, in twenty years, for $8.6 million during the low season at high cost in Papagayo using 2.75% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Papagayo)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 20 yrs. (2.75%)	Total Cost with Interest (2.75%)
6	$668.84	$605.67	$8,600,000	844	932	$564,777	$11,295,538
7	$779.68	$705.97	$8,600,000	724	800	$564,777	$11,295,538
8	$890.50	$806.26	$8,600,000	634	700	$564,777	$11,295,538
9	$1,003.80	$909.03	$8,600,000	563	621	$564,777	$11,295,538
10	$1,115.79	$1,010.49	$8,600,000	506	559	$564,777	$11,295,538

ADDITIONAL ANGLERS AND SCUBA DIVERS, ANNUAL COST AND TOTAL COST FOR PAPAGAYO AT 5.00% INTEREST RATE - **HIGH SEASON, LOW COST**

Table A69. The total number of additional anglers and scuba divers needed to break - even, in one year, for $8.6 million during the high season at low cost in Papagayo using 5.00% interest rate.

# Day	Anglers (Total Tax -	Scuba Divers (Total Tax-13%) (Papagayo)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 1 yr. (5.00%)	Total Cost with Interest (5.00%)
6	$288.04	$283.75	$8,600,000	31,349	31,823	$9,030,000	$9,030,000
7	$328.10	$323.09	$8,600,000	27,522	27,949	$9,030,000	$9,030,000
8	$375.79	$370.07	$8,600,000	24,029	24,401	$9,030,000	$9,030,000
9	$422.31	$415.88	$8,600,000	21,382	21,713	$9,030,000	$9,030,000
10	$469.57	$462.42	$8,600,000	19,230	19,528	$9,030,000	$9,030,000

Table A70. The total number of additional anglers and scuba divers needed to break - even, in five years, for $8.6 million during the high season at low cost in Papagayo using 5.00% interest rate.

# Day	Anglers (Total Tax -	Scuba Divers (Total Tax-13%) (Papagayo)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 5 yrs. (5.00%)	Total Cost with Interest (5.00%)
6	$288.04	$283.75	$8,600,000	6,896	7,000	$1,986,383	$9,931,916
7	$328.10	$323.09	$8,600,000	6,054	6,148	$1,986,383	$9,931,916
8	$375.79	$370.07	$8,600,000	5,286	5,368	$1,986,383	$9,931,916
9	$422.31	$415.88	$8,600,000	4,704	4,776	$1,986,383	$9,931,916
10	$469.57	$462.42	$8,600,000	4,230	4,296	$1,986,383	$9,931,916

Table A71. The total number of additional anglers and scuba divers needed to break - even, in ten years, for $8.6 million during the high season at low cost in Papagayo using 5.00% interest rate.

# Days	Anglers (Total Tax -13%)	Scuba Divers (Total Tax-13%) (Papagayo)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 10 yrs. (5.00%)	Total Cost with Interest (5.00%)
6	$288.04	$283.75	$8,600,000	3,867	3,925	$1,113,739	$11,137,393
7	$328.10	$323.09	$8,600,000	3,395	3,447	$1,113,739	$11,137,393
8	$375.79	$370.07	$8,600,000	2,964	3,010	$1,113,739	$11,137,393
9	$422.31	$415.88	$8,600,000	2,637	2,678	$1,113,739	$11,137,393
10	$469.57	$462.42	$8,600,000	2,372	2,409	$1,113,739	$11,137,393

Table A72. The total number of additional anglers and scuba divers needed to break - even, in fifteen years, for $8.6 million during the high season at low cost in Papagayo using 5.00% interest rate.

# Days	Anglers (Total Tax -	Scuba Divers (Total Tax-13%) (Papagayo)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 15 yrs. (5.00%)	Total Cost with Interest (5.00%)
6	$288.04	$283.75	$8,600,000	2,876	2,920	$828,544	$12,428,155
7	$328.10	$323.09	$8,600,000	2,525	2,564	$828,544	$12,428,155
8	$375.79	$370.07	$8,600,000	2,205	2,239	$828,544	$12,428,155
9	$422.31	$415.88	$8,600,000	1,962	1,992	$828,544	$12,428,155
10	$469.57	$462.42	$8,600,000	1,764	1,792	$828,544	$12,428,155

Table A73. The total number of additional anglers and scuba divers needed to break - even, in twenty years, for $8.6 million during the high season at low cost in Papagayo using 5.00% interest rate.

# Days	Anglers (Total Tax -	Scuba Divers (Total Tax-13%) (Papagayo)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 20 yrs. (5.00%)	Total Cost with Interest (5.00%)
6	$288.04	$283.75	$8,600,000	2,396	2,432	$690,086	$13,801,725
7	$328.10	$323.09	$8,600,000	2,103	2,136	$690,086	$13,801,725
8	$375.79	$370.07	$8,600,000	1,836	1,865	$690,086	$13,801,725
9	$422.31	$415.88	$8,600,000	1,634	1,659	$690,086	$13,801,725
10	$469.57	$462.42	$8,600,000	1,470	1,492	$690,086	$13,801,725

ADDITIONAL ANGLERS AND SCUBA DIVERS, ANNUAL COST AND TOTAL COST FOR PAPAGAYO AT 5.00% INTEREST RATE - **HIGH SEASON, HIGH COST**

Table A74. The total number of additional anglers and scuba divers needed to break - even, in one year, for $8.6 million during the high season at high cost in Papagayo using 5.00% interest rate.

# Day	Anglers (Total Tax-	Scuba Divers (Total Tax- 13%) (Papagayo)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 1 yr. (5.00%)	Total Cost with Interest (5.00%)
6	$1,250.36	$1,187.18	$8,600,000	7,222	7,606	$9,030,000	$9,030,000
7	$1,355.44	$1,281.73	$8,600,000	6,662	7,045	$9,030,000	$9,030,000
8	$1,567.50	$1,483.26	$8,600,000	5,761	6,088	$9,030,000	$9,030,000
9	$1,776.33	$1,681.55	$8,600,000	5,084	5,370	$9,030,000	$9,030,000
10	$1,968.86	$1,863.56	$8,600,000	4,586	4,846	$9,030,000	$9,030,000

Table A75. The total number of additional anglers and scuba divers needed to break - even, in five years, for $8.6 million during the high season at high cost in Papagayo using 5.00% interest rate.

# Day	Anglers (Total Tax-	Scuba Divers (Total Tax- 13%) (Papagayo)	Cost to Sink	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 5 yrs. (5.00%)	Total Cost with Interest (5.00%)
6	$1,250.36	$1,187.18	$8,600,000	1,589	1,673	$1,986,383	$9,931,916
7	$1,355.44	$1,281.73	$8,600,000	1,465	1,550	$1,986,383	$9,931,916
8	$1,567.50	$1,483.26	$8,600,000	1,267	1,339	$1,986,383	$9,931,916
9	$1,776.33	$1,681.55	$8,600,000	1,118	1,181	$1,986,383	$9,931,916
10	$1,968.86	$1,863.56	$8,600,000	1,009	1,066	$1,986,383	$9,931,916

Table A76. The total number of additional anglers and scuba divers needed to break - even, in ten years, for $8.6 million during the high season at high cost in Papagayo using 5.00% interest rate.

# Days	Anglers (Total Tax-13%)	Scuba Divers (Total Tax-13%) (Papagayo)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 10 yrs. (5.00%)	Total Cost with Interest (5.00%)
6	$1,250.36	$1,187.18	$8,600,000	891	938	$1,113,739	$11,137,393
7	$1,355.44	$1,281.73	$8,600,000	822	869	$1,113,739	$11,137,393
8	$1,567.50	$1,483.26	$8,600,000	711	751	$1,113,739	$11,137,393
9	$1,776.33	$1,681.55	$8,600,000	627	662	$1,113,739	$11,137,393
10	$1,968.86	$1,863.56	$8,600,000	566	598	$1,113,739	$11,137,393

Table A77. The total number of additional anglers and scuba divers needed to break - even, in fifteen years, for $8.6 million during the high season at high cost in Papagayo using 5.00% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Papagayo)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 15 yrs. (5.00%)	Total Cost with Interest (5.00%)
6	$1,250.36	$1,187.18	$8,600,000	663	698	$828,544	$12,428,155
7	$1,355.44	$1,281.73	$8,600,000	611	646	$828,544	$12,428,155
8	$1,567.50	$1,483.26	$8,600,000	529	559	$828,544	$12,428,155
9	$1,776.33	$1,681.55	$8,600,000	466	493	$828,544	$12,428,155
10	$1,968.86	$1,863.56	$8,600,000	421	445	$828,544	$12,428,155

Table A78. The total number of additional anglers and scuba divers needed to break - even, in twenty years, for $8.6 million during the high season at high cost in Papagayo using 5.00% interest rate.

# Days	Anglers (Total Tax-13%)	Scuba Divers (Total Tax-13%) (Papagayo)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 20 yrs. (5.00%)	Total Cost with Interest (5.00%)
6	$1,250.36	$1,187.18	$8,600,000	552	581	$690,086	$13,801,725
7	$1,355.44	$1,281.73	$8,600,000	509	538	$690,086	$13,801,725
8	$1,567.50	$1,483.26	$8,600,000	440	465	$690,086	$13,801,725
9	$1,776.33	$1,681.55	$8,600,000	388	410	$690,086	$13,801,725
10	$1,968.86	$1,863.56	$8,600,000	350	370	$690,086	$13,801,725

ADDITIONAL ANGLERS AND SCUBA DIVERS, ANNUAL COST AND TOTAL COST FOR PAPAGAYO AT 5.00% INTEREST RATE - **LOW SEASON, LOW COST**

Table A79. The total number of additional anglers and scuba divers needed to break-even, in one year, for $8.6 million during the low season at low cost in Papagayo using 5.00% interest rate.

# Day	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Papagayo)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 1 yr. (5.00%)	Total Cost with Interest (5.00%)
6	$229.76	$225.47	$8,600,000	39,302	40,050	$9,030,000	$9,030,000
7	$267.79	$262.78	$8,600,000	33,721	34,363	$9,030,000	$9,030,000
8	$306.08	$300.36	$8,600,000	29,502	30,064	$9,030,000	$9,030,000
9	$344.38	$337.94	$8,600,000	26,221	26,721	$9,030,000	$9,030,000
10	$382.93	$375.78	$8,600,000	23,581	24,030	$9,030,000	$9,030,000

Table A80. The total number of additional anglers and scuba divers needed to break - even, in five years, for $8.6 million during the low season at low cost in Papagayo using 5.00% interest rate.

# Day	Anglers (Total Tax-	Scuba Divers (Total Tax-13%)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 5 yrs. (5.00%)	Total Cost with Interest (5.00%)
6	$229.76	$225.47	$8,600,000	8,646	8,810	$1,986,383	$9,931,916
7	$267.79	$262.78	$8,600,000	7,418	7,559	$1,986,383	$9,931,916
8	$306.08	$300.36	$8,600,000	6,490	6,613	$1,986,383	$9,931,916
9	$344.38	$337.94	$8,600,000	5,768	5,878	$1,986,383	$9,931,916
10	$382.93	$375.78	$8,600,000	5,187	5,286	$1,986,383	$9,931,916

Table A81. The total number of additional anglers and scuba divers needed to break - even, in ten years, for $8.6 million during the low season at low cost in Papagayo using 5.00% interest rate.

# Days	Anglers (Total Tax-13%)	Scuba Divers (Total Tax-13%) (Papagayo)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 10 yrs. (5.00%)	Total Cost with Interest (5.00%)
6	$229.76	$225.47	$8,600,000	4,847	4,940	$1,113,739	$11,137,393
7	$267.79	$262.78	$8,600,000	4,159	4,238	$1,113,739	$11,137,393
8	$306.08	$300.36	$8,600,000	3,639	3,708	$1,113,739	$11,137,393
9	$344.38	$337.94	$8,600,000	3,234	3,296	$1,113,739	$11,137,393
10	$382.93	$375.78	$8,600,000	2,908	2,964	$1,113,739	$11,137,393

Table A82. The total number of additional anglers and scuba divers needed to break - even, in fifteen years, for $8.6 million during the low season at low cost in Papagayo using 5.00% interest rate.

# Days	Anglers (Total Tax-13%)	Scuba Divers (Total Tax-13%) (Papagayo)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 15 yrs. (5.00%)	Total Cost with Interest (5.00%)
6	$229.76	$225.47	$8,600,000	3,606	3,675	$828,544	$12,428,155
7	$267.79	$262.78	$8,600,000	3,094	3,153	$828,544	$12,428,155
8	$306.08	$300.36	$8,600,000	2,707	2,758	$828,544	$12,428,155
9	$344.38	$337.94	$8,600,000	2,406	2,452	$828,544	$12,428,155
10	$382.93	$375.78	$8,600,000	2,164	2,205	$828,544	$12,428,155

Table A83. The total number of additional anglers and scuba divers needed to break - even, in twenty years, for $8.6 million during the low season at low cost in Papagayo using 5.00% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Papagayo)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 20 yrs. (5.00%)	Total Cost with Interest (5.00%)
6	$229.76	$225.47	$8,600,000	3,004	3,061	$690,086	$13,801,725
7	$267.79	$262.78	$8,600,000	2,577	2,626	$690,086	$13,801,725
8	$306.08	$300.36	$8,600,000	2,255	2,298	$690,086	$13,801,725
9	$344.38	$337.94	$8,600,000	2,004	2,042	$690,086	$13,801,725
10	$382.93	$375.78	$8,600,000	1,802	1,836	$690,086	$13,801,725

ADDITIONAL ANGLERS AND SCUBA DIVERS, ANNUAL COST AND TOTAL COST FOR PAPAGAYO AT 5.00% INTEREST RATE - **LOW SEASON, HIGH COST**

Table A84. The total number of additional anglers and scuba divers needed to break-even, in one year, for $8.6 million during the low season at high cost in Papagayo using 5.00% interest rate.

# Day	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Papagayo)	Cost to Sink	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 1 yr. (5.00%)	Total Cost with Interest (5.00%)
6	$668.84	$605.67	$8,600,000	13,501	14,909	$9,030,000	$9,030,000
7	$779.68	$705.97	$8,600,000	11,582	12,791	$9,030,000	$9,030,000
8	$890.50	$806.26	$8,600,000	10,140	11,200	$9,030,000	$9,030,000
9	$1,003.80	$909.03	$8,600,000	8,996	9,934	$9,030,000	$9,030,000
10	$1,115.79	$1,010.49	$8,600,000	8,093	8,936	$9,030,000	$9,030,000

Table A85. The total number of additional anglers and scuba divers needed to break - even, in five years, for $8.6 million during the low season at high cost in Papagayo using 5.00% interest rate.

# Day	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Papagayo)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 5 yrs. (5.00%)	Total Cost with Interest (5.00%)
6	$668.84	$605.67	$8,600,000	2,970	3,280	$1,986,383	$9,931,916
7	$779.68	$705.97	$8,600,000	2,548	2,814	$1,986,383	$9,931,916
8	$890.50	$806.26	$8,600,000	2,231	2,464	$1,986,383	$9,931,916
9	$1,003.80	$909.03	$8,600,000	1,979	2,185	$1,986,383	$9,931,916
10	$1,115.79	$1,010.49	$8,600,000	1,780	1,966	$1,986,383	$9,931,916

Table A86. The total number of additional anglers and scuba divers needed to break - even, in ten years, for $8.6 million during the low season at high cost in Papagayo using 5.00% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Papagayo)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 10 yrs. (5.00%)	Total Cost with Interest (5.00%)
6	$668.84	$605.67	$8,600,000	1,665	1,839	$1,113,739	$11,137,393
7	$779.68	$705.97	$8,600,000	1,428	1,578	$1,113,739	$11,137,393
8	$890.50	$806.26	$8,600,000	1,251	1,381	$1,113,739	$11,137,393
9	$1,003.80	$909.03	$8,600,000	1,110	1,225	$1,113,739	$11,137,393
10	$1,115.79	$1,010.49	$8,600,000	998	1,102	$1,113,739	$11,137,393

Table A87. The total number of additional anglers and scuba divers needed to break - even, in fifteen years, for $8.6 million during the low season at high cost in Papagayo using 5.00% interest rate.

# Days	Anglers (Total Tax-13%)	Scuba Divers (Total Tax-13%) (Papagayo)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 15 yrs. (5.00%)	Total Cost with Interest (5.00%)
6	$668.84	$605.67	$8,600,000	1,239	1,368	$828,544	$12,428,155
7	$779.68	$705.97	$8,600,000	1,063	1,174	$828,544	$12,428,155
8	$890.50	$806.26	$8,600,000	930	1,028	$828,544	$12,428,155
9	$1,003.80	$909.03	$8,600,000	825	911	$828,544	$12,428,155
10	$1,115.79	$1,010.49	$8,600,000	743	820	$828,544	$12,428,155

Table A88. The total number of additional anglers and scuba divers needed to break - even, in twenty years, for $8.6 million during the low season at high cost in Papagayo using 5.00% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Papagayo)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 20 yrs. (5.00%)	Total Cost with Interest (5.00%)
6	$668.84	$605.67	$8,600,000	1,032	1,139	$690,086	$13,801,725
7	$779.68	$705.97	$8,600,000	885	978	$690,086	$13,801,725
8	$890.50	$806.26	$8,600,000	775	856	$690,086	$13,801,725
9	$1,003.80	$909.03	$8,600,000	687	759	$690,086	$13,801,725
10	$1,115.79	$1,010.49	$8,600,000	618	683	$690,086	$13,801,725

ADDITIONAL ANGLERS AND SCUBA DIVERS, ANNUAL COST AND TOTAL COST FOR CATALINAS AT 2.75% INTEREST RATE – **HIGH SEASON, LOW COST**

Table A89. The total number of additional anglers and scuba divers needed to break - even, in one year, for $8.6 million during the high season at low cost in Catalinas using 2.75% interest rate.

# Day	Anglers (Total Tax -13%)	Scuba Divers (Total Tax-13%) (Catalinas)	Cost to Sink	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 1 yr. (2.75%)	Total Cost with Interest (2.75%)
6	$288.04	$382.42	$8,600,000	30,678	23,107	$8,836,500	$8,836,500
7	$328.10	$438.21	$8,600,000	26,932	20,165	$8,836,500	$8,836,500
8	$375.79	$501.63	$8,600,000	23,514	17,616	$8,836,500	$8,836,500
9	$422.31	$563.88	$8,600,000	20,924	15,671	$8,836,500	$8,836,500
10	$469.57	$626.87	$8,600,000	18,818	14,096	$8,836,500	$8,836,500

Table A90. The total number of additional anglers and scuba divers needed to break - even, in five years, for $8.6 million during the high season at low cost in Catalinas using 2.75% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Catalinas)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 5 yrs. (2.75%)	Total Cost with Interest (2.75%)
6	$288.04	$382.42	$8,600,000	6,473	4,875	$1,864,466	$9,322,328
7	$328.10	$438.21	$8,600,000	5,683	4,255	$1,864,466	$9,322,328
8	$375.79	$501.63	$8,600,000	4,961	3,717	$1,864,466	$9,322,328
9	$422.31	$563.88	$8,600,000	4,415	3,306	$1,864,466	$9,322,328
10	$469.57	$626.87	$8,600,000	3,971	2,974	$1,864,466	$9,322,328

Table A91. The total number of additional anglers and scuba divers needed to break - even, in ten years, for $8.6 million during the high season at low cost in Catalinas using 2.75% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Catalinas)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 10 yrs. (2.75%)	Total Cost with Interest (2.75%)
6	$288.04	$382.42	$8,600,000	3,456	2,603	$995,362	$9,953,616
7	$328.10	$438.21	$8,600,000	3,034	2,271	$995,362	$9,953,616
8	$375.79	$501.63	$8,600,000	2,649	1,984	$995,362	$9,953,616
9	$422.31	$563.88	$8,600,000	2,357	1,765	$995,362	$9,953,616
10	$469.57	$626.87	$8,600,000	2,120	1,588	$995,362	$9,953,616

Table A92. The total number of additional anglers and scuba divers needed to break - even, in fifteen years, for $8.6 million during the high season at low cost in Catalinas using 2.75% interest rate.

# Days	Anglers (Total Tax-13%)	Scuba Divers (Total Tax-13%) (Catalinas)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 15 yrs. (2.75%)	Total Cost with Interest (2.75%)
6	$288.04	$382.42	$8,600,000	2,456	1,850	$707,429	$10,611,433
7	$328.10	$438.21	$8,600,000	2,156	1,614	$707,429	$10,611,433
8	$375.79	$501.63	$8,600,000	1,883	1,410	$707,429	$10,611,433
9	$422.31	$563.88	$8,600,000	1,675	1,255	$707,429	$10,611,433
10	$469.57	$626.87	$8,600,000	1,507	1,129	$707,429	$10,611,433

Table A93. The total number of additional anglers and scuba divers needed to break - even, in twenty years, for $8.6 million during the high season at low cost in Catalinas using 2.75% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax- 13%) (Catalinas)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 20 yrs. (2.75%)	Total Cost with Interest (2.75%)
6	$288.04	$382.42	$8,600,000	1,961	1,477	$564,777	$11,295,538
7	$328.10	$438.21	$8,600,000	1,721	1,289	$564,777	$11,295,538
8	$375.79	$501.63	$8,600,000	1,503	1,126	$564,777	$11,295,538
9	$422.31	$563.88	$8,600,000	1,337	1,002	$564,777	$11,295,538
10	$469.57	$626.87	$8,600,000	1,203	901	$564,777	$11,295,538

ADDITIONAL ANGLERS AND SCUBA DIVERS, ANNUAL COST AND TOTAL COST FOR CATALINAS AT 2.75% INTEREST RATE – **HIGH SEASON, HIGH COST**

Table A94. The total number of additional anglers and scuba divers needed to break - even, in one year, for $8.6 million during the high season at high cost in Catalinas using 2.75% interest rate.

# Day	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Catalinas)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 1 yr. (2.75%)	Total Cost with Interest (2.75%)
6	$1,250.36	$1,294.82	$8,600,000	7,067	6,825	$8,836,500	$8,836,500
7	$1,355.44	$1,407.31	$8,600,000	6,519	6,279	$8,836,500	$8,836,500
8	$1,567.50	$1,626.78	$8,600,000	5,637	5,432	$8,836,500	$8,836,500
9	$1,776.33	$1,843.01	$8,600,000	4,975	4,795	$8,836,500	$8,836,500
10	$1,968.86	$2,042.96	$8,600,000	4,488	4,325	$8,836,500	$8,836,500

Table A95. The total number of additional anglers and scuba divers needed to break - even, in five years, for $8.6 million during the high season at high cost in Catalinas using 2.75% interest rate.

# Days	Anglers (Total Tax-13%)	Scuba Divers (Total Tax-13%) (Catalinas)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 5 yrs. (2.75%)	Total Cost with Interest (2.75%)
6	$1,250.36	$1,294.82	$8,600,000	1,491	1,440	$1,864,466	$9,322,328
7	$1,355.44	$1,407.31	$8,600,000	1,376	1,325	$1,864,466	$9,322,328
8	$1,567.50	$1,626.78	$8,600,000	1,189	1,146	$1,864,466	$9,322,328
9	$1,776.33	$1,843.01	$8,600,000	1,050	1,012	$1,864,466	$9,322,328
10	$1,968.86	$2,042.96	$8,600,000	947	913	$1,864,466	$9,322,328

Table A96. The total number of additional anglers and scuba divers needed to break - even, in ten years, for $8.6 million during the high season at high cost in Catalinas using 2.75% interest rate.

# Days	Anglers (Total Tax-13%)	Scuba Divers (Total Tax-13%) (Catalinas)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 10 yrs. (2.75%)	Total Cost with Interest (2.75%)
6	$1,250.36	$1,294.82	$8,600,000	796	769	$995,362	$9,953,616
7	$1,355.44	$1,407.31	$8,600,000	734	707	$995,362	$9,953,616
8	$1,567.50	$1,626.78	$8,600,000	635	612	$995,362	$9,953,616
9	$1,776.33	$1,843.01	$8,600,000	560	540	$995,362	$9,953,616
10	$1,968.86	$2,042.96	$8,600,000	506	487	$995,362	$9,953,616

Table A97. The total number of additional anglers and scuba divers needed to break - even, in fifteen years, for $8.6 million during the high season at high cost in Catalinas using 2.75% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Catalinas)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 15 yrs. (2.75%)	Total Cost with Interest (2.75%)
6	$1,250.36	$1,294.82	$8,600,000	566	546	$707,429	$10,611,433
7	$1,355.44	$1,407.31	$8,600,000	522	503	$707,429	$10,611,433
8	$1,567.50	$1,626.78	$8,600,000	451	435	$707,429	$10,611,433
9	$1,776.33	$1,843.01	$8,600,000	398	384	$707,429	$10,611,433
10	$1,968.86	$2,042.96	$8,600,000	359	346	$707,429	$10,611,433

Table A98. The total number of additional anglers and scuba divers needed to break - even, in twenty years, for $8.6 million during the high season at high cost in Catalinas using 2.75% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Catalinas)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 20 yrs. (2.75%)	Total Cost with Interest (2.75%)
6	$1,250.36	$1,294.82	$8,600,000	452	436	$564,777	$11,295,538
7	$1,355.44	$1,407.31	$8,600,000	417	401	$564,777	$11,295,538
8	$1,567.50	$1,626.78	$8,600,000	360	347	$564,777	$11,295,538
9	$1,776.33	$1,843.01	$8,600,000	318	306	$564,777	$11,295,538
10	$1,968.86	$2,042.96	$8,600,000	287	276	$564,777	$11,295,538

ADDITIONAL ANGLERS AND SCUBA DIVERS, ANNUAL COST AND TOTAL COST FOR CATALINAS AT 2.75% INTEREST RATE – **LOW SEASON, LOW COST**

Table A99. The total number of additional anglers and scuba divers needed to break - even, in one year, for $8.6 million during the low season at low cost in Catalinas using 2.75% interest rate.

# Day	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Catalinas)	Cost to Sink	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 1 yr. (2.75%)	Total Cost with Interest (2.75%)
6	$229.76	$324.14	$8,600,000	38,460	27,262	$8,836,500	$8,836,500
7	$267.79	$377.90	$8,600,000	32,998	23,383	$8,836,500	$8,836,500
8	$306.08	$431.92	$8,600,000	28,870	20,459	$8,836,500	$8,836,500
9	$344.38	$485.95	$8,600,000	25,660	18,184	$8,836,500	$8,836,500
10	$382.93	$540.23	$8,600,000	23,076	16,357	$8,836,500	$8,836,500

Table A100. The total number of additional anglers and scuba divers needed to break - even, in five years, for $8.6 million during the low season at low cost in Catalinas using 2.75% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Catalinas)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 5 yrs. (2.75%)	Total Cost with Interest (2.75%)
6	$229.76	$324.14	$8,600,000	8,115	5,752	$1,864,466	$9,322,328
7	$267.79	$377.90	$8,600,000	6,962	4,934	$1,864,466	$9,322,328
8	$306.08	$431.92	$8,600,000	6,091	4,317	$1,864,466	$9,322,328
9	$344.38	$485.95	$8,600,000	5,414	3,837	$1,864,466	$9,322,328
10	$382.93	$540.23	$8,600,000	4,869	3,451	$1,864,466	$9,322,328

Table A101. The total number of additional anglers and scuba divers needed to break - even, in ten years, for $8.6 million during the low season at low cost in Catalinas using 2.75% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Catalinas)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 10 yrs. (2.75%)	Total Cost with Interest (2.75%)
6	$229.76	$324.14	$8,600,000	4,332	3,071	$995,362	$9,953,616
7	$267.79	$377.90	$8,600,000	3,717	2,634	$995,362	$9,953,616
8	$306.08	$431.92	$8,600,000	3,252	2,304	$995,362	$9,953,616
9	$344.38	$485.95	$8,600,000	2,890	2,048	$995,362	$9,953,616
10	$382.93	$540.23	$8,600,000	2,599	1,842	$995,362	$9,953,616

Table A102. The total number of additional anglers and scuba divers needed to break - even, in fifteen years, for $8.6 million during the low season at low cost in Catalinas using 2.75% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Catalinas)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 15 yrs. (2.75%)	Total Cost with Interest (2.75%)
6	$229.76	$324.14	$8,600,000	3,079	2,183	$707,429	$10,611,433
7	$267.79	$377.90	$8,600,000	2,642	1,872	$707,429	$10,611,433
8	$306.08	$431.92	$8,600,000	2,311	1,638	$707,429	$10,611,433
9	$344.38	$485.95	$8,600,000	2,054	1,456	$707,429	$10,611,433
10	$382.93	$540.23	$8,600,000	1,847	1,310	$707,429	$10,611,433

Table A103. The total number of additional anglers and scuba divers needed to break - even, in twenty years, for $8.6 million during the low season at low cost in Catalinas using 2.75% interest rate.

# Days	Anglers (Total Tax-13%)	Scuba Divers (Total Tax-13%) (Catalinas)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 20 yrs. (2.75%)	Total Cost with Interest (2.75%)
6	$229.76	$324.14	$8,600,000	2,458	1,742	$564,777	$11,295,538
7	$267.79	$377.90	$8,600,000	2,109	1,495	$564,777	$11,295,538
8	$306.08	$431.92	$8,600,000	1,845	1,308	$564,777	$11,295,538
9	$344.38	$485.95	$8,600,000	1,640	1,162	$564,777	$11,295,538
10	$382.93	$540.23	$8,600,000	1,475	1,045	$564,777	$11,295,538

ADDITIONAL ANGLERS AND SCUBA DIVERS, ANNUAL COST AND TOTAL COST FOR CATALINAS AT 2.75% INTEREST RATE – **LOW SEASON, HIGH COST**

Table A104. The total number of additional anglers and scuba divers needed to break - even, in one year, for $8.6 million during the low season at high cost in Catalinas using 2.75% interest rate.

# Day	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Catalinas)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 1 yr. (2.75%)	Total Cost with Interest (2.75%)
6	$668.84	$713.31	$8,600,000	13,212	12,388	$8,836,500	$8,836,500
7	$779.68	$831.55	$8,600,000	11,333	10,627	$8,836,500	$8,836,500
8	$890.50	$949.78	$8,600,000	9,923	9,304	$8,836,500	$8,836,500
9	$1,003.80	$1,070.49	$8,600,000	8,803	8,255	$8,836,500	$8,836,500
10	$1,115.79	$1,189.89	$8,600,000	7,920	7,426	$8,836,500	$8,836,500

Table A105. The total number of additional anglers and scuba divers needed to break - even, in five years, for $8.6 million during the low season at high cost in Catalinas using 2.75% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Catalinas)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 5 yrs. (2.75%)	Total Cost with Interest (2.75%)
6	$668.84	$713.31	$8,600,000	2,788	2,614	$1,864,466	$9,322,328
7	$779.68	$831.55	$8,600,000	2,391	2,242	$1,864,466	$9,322,328
8	$890.50	$949.78	$8,600,000	2,094	1,963	$1,864,466	$9,322,328
9	$1,003.80	$1,070.49	$8,600,000	1,857	1,742	$1,864,466	$9,322,328
10	$1,115.79	$1,189.89	$8,600,000	1,671	1,567	$1,864,466	$9,322,328

Table A106. The total number of additional anglers and scuba divers needed to break - even, in ten years, for $8.6 million during the low season at high cost in Catalinas using 2.75% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Catalinas)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 10 yrs. (2.75%)	Total Cost with Interest (2.75%)
6	$668.84	$713.31	$8,600,000	1,488	1,395	$995,362	$9,953,616
7	$779.68	$831.55	$8,600,000	1,277	1,197	$995,362	$9,953,616
8	$890.50	$949.78	$8,600,000	1,118	1,048	$995,362	$9,953,616
9	$1,003.80	$1,070.49	$8,600,000	992	930	$995,362	$9,953,616
10	$1,115.79	$1,189.89	$8,600,000	892	837	$995,362	$9,953,616

Table A107. The total number of additional anglers and scuba divers needed to break - even, in fifteen years, for $8.6 million during the low season at high cost in Catalinas using 2.75% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Catalinas)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 15 yrs. (2.75%)	Total Cost with Interest (2.75%)
6	$668.84	$713.31	$8,600,000	1,058	992	$707,429	$10,611,433
7	$779.68	$831.55	$8,600,000	907	851	$707,429	$10,611,433
8	$890.50	$949.78	$8,600,000	794	745	$707,429	$10,611,433
9	$1,003.80	$1,070.49	$8,600,000	705	661	$707,429	$10,611,433
10	$1,115.79	$1,189.89	$8,600,000	634	595	$707,429	$10,611,433

Table A108. The total number of additional anglers and scuba divers needed to break - even, in twenty years, for $8.6 million during the low season at high cost in Catalinas using 2.75% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Catalinas)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 20 yrs. (2.75%)	Total Cost with Interest (2.75%)
6	$668.84	$713.31	$8,600,000	844	792	$564,777	$11,295,538
7	$779.68	$831.55	$8,600,000	724	679	$564,777	$11,295,538
8	$890.50	$949.78	$8,600,000	634	595	$564,777	$11,295,538
9	$1,003.80	$1,070.49	$8,600,000	563	528	$564,777	$11,295,538
10	$1,115.79	$1,189.89	$8,600,000	506	475	$564,777	$11,295,538

ADDITIONAL ANGLERS AND SCUBA DIVERS, ANNUAL COST AND TOTAL COST FOR CATALINAS AT 5.00% INTEREST RATE – **HIGH SEASON, LOW COST**

Table A109. The total number of additional anglers and scuba divers needed to break - even, in one year, for $8.6 million during the high season at low cost in Catalinas using 5.00% interest rate.

# Day	Anglers (Total Tax -13%)	Scuba Divers (Total Tax-13%) (Catalinas)	Cost to Sink	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 1 yr. (5.00%)	Total Cost with Interest (5.00%)
6	$288.04	$382.42	$8,600,000	31,349	23,613	$9,030,000	$9,030,000
7	$328.10	$438.21	$8,600,000	27,522	20,607	$9,030,000	$9,030,000
8	$375.79	$501.63	$8,600,000	24,029	18,001	$9,030,000	$9,030,000
9	$422.31	$563.88	$8,600,000	21,382	16,014	$9,030,000	$9,030,000
10	$469.57	$626.87	$8,600,000	19,230	14,405	$9,030,000	$9,030,000

Table A110. The total number of additional anglers and scuba divers needed to break - even, in five years, for $8.6 million during the high season at low cost in Catalinas using 5.00% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Catalinas)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 5 yrs. (5.00%)	Total Cost with Interest (5.00%)
6	$288.04	$382.42	$8,600,000	6,896	5,194	$1,986,383	$9,931,916
7	$328.10	$438.21	$8,600,000	6,054	4,533	$1,986,383	$9,931,916
8	$375.79	$501.63	$8,600,000	5,286	3,960	$1,986,383	$9,931,916
9	$422.31	$563.88	$8,600,000	4,704	3,523	$1,986,383	$9,931,916
10	$469.57	$626.87	$8,600,000	4,230	3,169	$1,986,383	$9,931,916

Table A111. The total number of additional anglers and scuba divers needed to break - even, in ten years, for $8.6 million during the high season at low cost in Catalinas using 5.00% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Catalinas)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 10 yrs. (5.00%)	Total Cost with Interest (5.00%)
6	$288.04	$382.42	$8,600,000	3,867	2,912	$1,113,739	$11,137,393
7	$328.10	$438.21	$8,600,000	3,395	2,542	$1,113,739	$11,137,393
8	$375.79	$501.63	$8,600,000	2,964	2,220	$1,113,739	$11,137,393
9	$422.31	$563.88	$8,600,000	2,637	1,975	$1,113,739	$11,137,393
10	$469.57	$626.87	$8,600,000	2,372	1,777	$1,113,739	$11,137,393

Table A112. The total number of additional anglers and scuba divers needed to break - even, in fifteen years, for $8.6 million during the high season at low cost in Catalinas using 5.00% interest rate.

# Days	Anglers (Total Tax-13%)	Scuba Divers (Total Tax-13%) (Catalinas)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 15 yrs. (5.00%)	Total Cost with Interest (5.00%)
6	$288.04	$382.42	$8,600,000	2,876	2,167	$828,544	$12,428,155
7	$328.10	$438.21	$8,600,000	2,525	1,891	$828,544	$12,428,155
8	$375.79	$501.63	$8,600,000	2,205	1,652	$828,544	$12,428,155
9	$422.31	$563.88	$8,600,000	1,962	1,469	$828,544	$12,428,155
10	$469.57	$626.87	$8,600,000	1,764	1,322	$828,544	$12,428,155

Table A113. The total number of additional anglers and scuba divers needed to break - even, in twenty years, for $8.6 million during the high season at low cost in Catalinas using 5.00% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax- 13%) (Catalinas)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 20 yrs. (5.00%)	Total Cost with Interest (5.00%)
6	$288.04	$382.42	$8,600,000	2,396	1,805	$690,086	$13,801,725
7	$328.10	$438.21	$8,600,000	2,103	1,575	$690,086	$13,801,725
8	$375.79	$501.63	$8,600,000	1,836	1,376	$690,086	$13,801,725
9	$422.31	$563.88	$8,600,000	1,634	1,224	$690,086	$13,801,725
10	$469.57	$626.87	$8,600,000	1,470	1,101	$690,086	$13,801,725

ADDITIONAL ANGLERS AND SCUBA DIVERS, ANNUAL COST AND TOTAL COST FOR CATALINAS AT 5.00% INTEREST RATE – **HIGH SEASON, HIGH COST**

Table A114. The total number of additional anglers and scuba divers needed to break - even, in one year, for $8.6 million during the high season at high cost in Catalinas using 5.00% interest rate.

# Day	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Catalinas)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 1 yr. (5.00%)	Total Cost with Interest (5.00%)
6	$1,250.36	$1,294.82	$8,600,000	7,222	6,974	$9,030,000	$9,030,000
7	$1,355.44	$1,407.31	$8,600,000	6,662	6,417	$9,030,000	$9,030,000
8	$1,567.50	$1,626.78	$8,600,000	5,761	5,551	$9,030,000	$9,030,000
9	$1,776.33	$1,843.01	$8,600,000	5,084	4,900	$9,030,000	$9,030,000
10	$1,968.86	$2,042.96	$8,600,000	4,586	4,420	$9,030,000	$9,030,000

Table A115. The total number of additional anglers and scuba divers needed to break - even, in five years, for $8.6 million during the high season at high cost in Catalinas using 5.00% interest rate.

# Days	Anglers (Total Tax-13%)	Scuba Divers (Total Tax-13%) (Catalinas)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 5 yrs. (5.00%)	Total Cost with Interest (5.00%)
6	$1,250.36	$1,294.82	$8,600,000	1,589	1,534	$1,986,383	$9,931,916
7	$1,355.44	$1,407.31	$8,600,000	1,465	1,411	$1,986,383	$9,931,916
8	$1,567.50	$1,626.78	$8,600,000	1,267	1,221	$1,986,383	$9,931,916
9	$1,776.33	$1,843.01	$8,600,000	1,118	1,078	$1,986,383	$9,931,916
10	$1,968.86	$2,042.96	$8,600,000	1,009	972	$1,986,383	$9,931,916

Table A116. The total number of additional anglers and scuba divers needed to break - even, in ten years, for $8.6 million during the high season at high cost in Catalinas using 5.00% interest rate.

# Days	Anglers (Total Tax-13%)	Scuba Divers (Total Tax-13%) (Catalinas)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 10 yrs. (5.00%)	Total Cost with Interest (5.00%)
6	$1,250.36	$1,294.82	$8,600,000	891	860	$1,113,739	$11,137,393
7	$1,355.44	$1,407.31	$8,600,000	822	791	$1,113,739	$11,137,393
8	$1,567.50	$1,626.78	$8,600,000	711	685	$1,113,739	$11,137,393
9	$1,776.33	$1,843.01	$8,600,000	627	604	$1,113,739	$11,137,393
10	$1,968.86	$2,042.96	$8,600,000	566	545	$1,113,739	$11,137,393

Table A117. The total number of additional anglers and scuba divers needed to break - even, in fifteen years, for $8.6 million during the high season at high cost in Catalinas using 5.00% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Catalinas)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 15 yrs. (5.00%)	Total Cost with Interest (5.00%)
6	$1,250.36	$1,294.82	$8,600,000	663	640	$828,544	$12,428,155
7	$1,355.44	$1,407.31	$8,600,000	611	589	$828,544	$12,428,155
8	$1,567.50	$1,626.78	$8,600,000	529	509	$828,544	$12,428,155
9	$1,776.33	$1,843.01	$8,600,000	466	450	$828,544	$12,428,155
10	$1,968.86	$2,042.96	$8,600,000	421	406	$828,544	$12,428,155

Table A118. The total number of additional anglers and scuba divers needed to break - even, in twenty years, for $8.6 million during the high season at high cost in Catalinas using 5.00% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Catalinas)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 20 yrs. (5.00%)	Total Cost with Interest (5.00%)
6	$1,250.36	$1,294.82	$8,600,000	552	533	$690,086	$13,801,725
7	$1,355.44	$1,407.31	$8,600,000	509	490	$690,086	$13,801,725
8	$1,567.50	$1,626.78	$8,600,000	440	424	$690,086	$13,801,725
9	$1,776.33	$1,843.01	$8,600,000	388	374	$690,086	$13,801,725
10	$1,968.86	$2,042.96	$8,600,000	350	338	$690,086	$13,801,725

ADDITIONAL ANGLERS AND SCUBA DIVERS, ANNUAL COST AND TOTAL COST FOR CATALINAS AT 5.00% INTEREST RATE – **LOW SEASON, LOW COST**

Table A119. The total number of additional anglers and scuba divers needed to break - even, in one year, for $8.6 million during the low season at low cost in Catalinas using 5.00% interest rate.

# Day	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Catalinas)	Cost to Sink	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 1 yr. (5.00%)	Total Cost with Interest (5.00%)
6	$229.76	$324.14	$8,600,000	39,302	27,859	$9,030,000	$9,030,000
7	$267.79	$377.90	$8,600,000	33,721	23,895	$9,030,000	$9,030,000
8	$306.08	$431.92	$8,600,000	29,502	20,907	$9,030,000	$9,030,000
9	$344.38	$485.95	$8,600,000	26,221	18,582	$9,030,000	$9,030,000
10	$382.93	$540.23	$8,600,000	23,581	16,715	$9,030,000	$9,030,000

Table A120. The total number of additional anglers and scuba divers needed to break - even, in five years, for $8.6 million during the low season at low cost in Catalinas using 5.00% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Catalinas)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 5 yrs. (5.00%)	Total Cost with Interest (5.00%)
6	$229.76	$324.14	$8,600,000	8,645	6,128	$1,986,383	$9,931,916
7	$267.79	$377.90	$8,600,000	7,418	5,256	$1,986,383	$9,931,916
8	$306.08	$431.92	$8,600,000	6,490	4,599	$1,986,383	$9,931,916
9	$344.38	$485.95	$8,600,000	5,768	4,088	$1,986,383	$9,931,916
10	$382.93	$540.23	$8,600,000	5,187	3,677	$1,986,383	$9,931,916

Table A121. The total number of additional anglers and scuba divers needed to break - even, in ten years, for $8.6 million during the low season at low cost in Catalinas using 5.00% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Catalinas)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 10 yrs. (5.00%)	Total Cost with Interest (5.00%)
6	$229.76	$324.14	$8,600,000	4,847	3,436	$1,113,739	$11,137,393
7	$267.79	$377.90	$8,600,000	4,159	2,947	$1,113,739	$11,137,393
8	$306.08	$431.92	$8,600,000	3,639	2,579	$1,113,739	$11,137,393
9	$344.38	$485.95	$8,600,000	3,234	2,292	$1,113,739	$11,137,393
10	$382.93	$540.23	$8,600,000	2,908	2,062	$1,113,739	$11,137,393

Table A122. The total number of additional anglers and scuba divers needed to break - even, in fifteen years, for $8.6 million during the low season at low cost in Catalinas using 5.00% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Catalinas)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 15 yrs. (5.00%)	Total Cost with Interest (5.00%)
6	$229.76	$324.14	$8,600,000	3,606	2,556	$828,544	$12,428,155
7	$267.79	$377.90	$8,600,000	3,094	2,192	$828,544	$12,428,155
8	$306.08	$431.92	$8,600,000	2,707	1,918	$828,544	$12,428,155
9	$344.38	$485.95	$8,600,000	2,406	1,705	$828,544	$12,428,155
10	$382.93	$540.23	$8,600,000	2,164	1,534	$828,544	$12,428,155

Table A123. The total number of additional anglers and scuba divers needed to break - even, in twenty years, for $8.6 million during the low season at low cost in Catalinas using 5.00% interest rate.

# Days	Anglers (Total Tax-13%)	Scuba Divers (Total Tax-13%) (Catalinas)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 20 yrs. (5.00%)	Total Cost with Interest (5.00%)
6	$229.76	$324.14	$8,600,000	3,004	2,129	$690,086	$13,801,725
7	$267.79	$377.90	$8,600,000	2,577	1,826	$690,086	$13,801,725
8	$306.08	$431.92	$8,600,000	2,255	1,598	$690,086	$13,801,725
9	$344.38	$485.95	$8,600,000	2,004	1,420	$690,086	$13,801,725
10	$382.93	$540.23	$8,600,000	1,802	1,277	$690,086	$13,801,725

ADDITIONAL ANGLERS AND SCUBA DIVERS, ANNUAL COST AND TOTAL COST FOR CATALINAS AT 5.00% INTEREST RATE – **LOW SEASON, HIGH COST**

Table A124. The total number of additional anglers and scuba divers needed to break - even, in one year, for $8.6 million during the low season at high cost in Catalinas using 5.00% interest rate.

# Day	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Catalinas)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 1 yr. (5.00%)	Total Cost with Interest (5.00%)
6	$668.84	$713.31	$8,600,000	13,501	12,659	$9,030,000	$9,030,000
7	$779.68	$831.55	$8,600,000	11,582	10,859	$9,030,000	$9,030,000
8	$890.50	$949.78	$8,600,000	10,140	9,507	$9,030,000	$9,030,000
9	$1,003.80	$1,070.49	$8,600,000	8,996	8,435	$9,030,000	$9,030,000
10	$1,115.79	$1,189.89	$8,600,000	8,093	7,589	$9,030,000	$9,030,000

Table A125. The total number of additional anglers and scuba divers needed to break - even, in five years, for $8.6 million during the low season at high cost in Catalinas using 5.00% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Catalinas)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 5 yrs. (5.00%)	Total Cost with Interest (5.00%)
6	$668.84	$713.31	$8,600,000	2,970	2,785	$1,986,383	$9,931,916
7	$779.68	$831.55	$8,600,000	2,548	2,389	$1,986,383	$9,931,916
8	$890.50	$949.78	$8,600,000	2,231	2,091	$1,986,383	$9,931,916
9	$1,003.80	$1,070.49	$8,600,000	1,979	1,856	$1,986,383	$9,931,916
10	$1,115.79	$1,189.89	$8,600,000	1,780	1,669	$1,986,383	$9,931,916

Table A126. The total number of additional anglers and scuba divers needed to break - even, in ten years, for $8.6 million during the low season at high cost in Catalinas using 5.00% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Catalinas)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 10 yrs. (5.00%)	Total Cost with Interest (5.00%)
6	$668.84	$713.31	$8,600,000	1,665	1,561	$1,113,739	$11,137,393
7	$779.68	$831.55	$8,600,000	1,428	1,339	$1,113,739	$11,137,393
8	$890.50	$949.78	$8,600,000	1,251	1,173	$1,113,739	$11,137,393
9	$1,003.80	$1,070.49	$8,600,000	1,110	1,040	$1,113,739	$11,137,393
10	$1,115.79	$1,189.89	$8,600,000	998	936	$1,113,739	$11,137,393

Table A127. The total number of additional anglers and scuba divers needed to break - even, in fifteen years, for $8.6 million during the low season at high cost in Catalinas using 5.00% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Catalinas)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 15 yrs. (5.00%)	Total Cost with Interest (5.00%)
6	$668.84	$713.31	$8,600,000	1,239	1,162	$828,544	$12,428,155
7	$779.68	$831.55	$8,600,000	1,063	996	$828,544	$12,428,155
8	$890.50	$949.78	$8,600,000	930	872	$828,544	$12,428,155
9	$1,003.80	$1,070.49	$8,600,000	825	774	$828,544	$12,428,155
10	$1,115.79	$1,189.89	$8,600,000	743	696	$828,544	$12,428,155

Table A128. The total number of additional anglers and scuba divers needed to break - even, in twenty years, for $8.6 million during the low season at high cost in Catalinas using 5.00% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax- 13%) (Catalinas)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 20 yrs. (5.00%)	Total Cost with Interest (5.00%)
6	$668.84	$713.31	$8,600,000	1,032	967	$690,086	$13,801,725
7	$779.68	$831.55	$8,600,000	885	830	$690,086	$13,801,725
8	$890.50	$949.78	$8,600,000	775	727	$690,086	$13,801,725
9	$1,003.80	$1,070.49	$8,600,000	687	645	$690,086	$13,801,725
10	$1,115.79	$1,189.89	$8,600,000	618	580	$690,086	$13,801,725

ADDITIONAL ANGLERS AND SCUBA DIVERS, ANNUAL COST AND TOTAL COST FOR BAT ISLANDS AT 2.75% INTEREST RATE – **HIGH SEASON, LOW COST**

Table A129. The total number of additional anglers and scuba divers needed to break - even, in one year, for $8.6 million during the high season at low cost in Bat Islands using 2.75% interest rate.

# Day	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Bat Islands)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 1 yr. (2.75%)	Total Cost with Interest (2.75%)
6	$288.04	$309.49	$8,600,000	30,678	28,551	$8,836,500	$8,836,500
7	$328.10	$353.12	$8,600,000	26,932	25,024	$8,836,500	$8,836,500
8	$375.79	$404.39	$8,600,000	23,514	21,851	$8,836,500	$8,836,500
9	$422.31	$454.49	$8,600,000	20,924	19,443	$8,836,500	$8,836,500
10	$469.57	$505.32	$8,600,000	18,818	17,487	$8,836,500	$8,836,500

Table A130. The total number of additional anglers and scuba divers needed to break - even, in five years, for $8.6 million during the high season at low cost in Bat Islands using 2.75% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Bat Islands)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 5 yrs. (2.75%)	Total Cost with Interest (2.75%)
6	$288.04	$309.49	$8,600,000	6,473	6,024	$1,864,466	$9,322,328
7	$328.10	$353.12	$8,600,000	5,683	5,280	$1,864,466	$9,322,328
8	$375.79	$404.39	$8,600,000	4,961	4,611	$1,864,466	$9,322,328
9	$422.31	$454.49	$8,600,000	4,415	4,102	$1,864,466	$9,322,328
10	$469.57	$505.32	$8,600,000	3,971	3,690	$1,864,466	$9,322,328

Table A131. The total number of additional anglers and scuba divers needed to break - even, in ten years, for $8.6 million during the high season at low cost in Bat Islands using 2.75% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Bat Islands)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 10 yrs. (2.75%)	Total Cost with Interest (2.75%)
6	$288.04	$309.49	$8,600,000	3,456	3,216	$995,362	$9,953,616
7	$328.10	$353.12	$8,600,000	3,034	2,819	$995,362	$9,953,616
8	$375.79	$404.39	$8,600,000	2,649	2,461	$995,362	$9,953,616
9	$422.31	$454.49	$8,600,000	2,357	2,190	$995,362	$9,953,616
10	$469.57	$505.32	$8,600,000	2,120	1,970	$995,362	$9,953,616

Table A132. The total number of additional anglers and scuba divers needed to break - even, in fifteen years, for $8.6 million during the high season at low cost in Bat Islands using 2.75% interest rate.

# Days	Anglers (Total Tax-13%)	Scuba Divers (Total Tax-13%) (Bat Islands)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 15 yrs. (2.75%)	Total Cost with Interest (2.75%)
6	$288.04	$309.49	$8,600,000	2,456	2,286	$707,429	$10,611,433
7	$328.10	$353.12	$8,600,000	2,156	2,003	$707,429	$10,611,433
8	$375.79	$404.39	$8,600,000	1,883	1,749	$707,429	$10,611,433
9	$422.31	$454.49	$8,600,000	1,675	1,557	$707,429	$10,611,433
10	$469.57	$505.32	$8,600,000	1,507	1,400	$707,429	$10,611,433

Table A133. The total number of additional anglers and scuba divers needed to break - even, in twenty years, for $8.6 million during the high season at low cost in Bat Islands using 2.75% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Bat Islands)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 20 yrs. (2.75%)	Total Cost with Interest (2.75%)
6	$288.04	$309.49	$8,600,000	1,961	1,825	$564,777	$11,295,538
7	$328.10	$353.12	$8,600,000	1,721	1,599	$564,777	$11,295,538
8	$375.79	$404.39	$8,600,000	1,503	1,397	$564,777	$11,295,538
9	$422.31	$454.49	$8,600,000	1,337	1,243	$564,777	$11,295,538
10	$469.57	$505.32	$8,600,000	1,203	1,118	$564,777	$11,295,538

ADDITIONAL ANGLERS AND SCUBA DIVERS, ANNUAL COST AND TOTAL COST FOR BAT ISLANDS AT 2.75% INTEREST RATE – **HIGH SEASON, HIGH COST**

Table A134. The total number of additional anglers and scuba divers needed to break - even, in one year, for $8.6 million during the high season at high cost in Bat Islands using 2.75% interest rate.

# Day	Anglers (Total Tax-13%)	Scuba Divers (Total Tax-13%) (Bat Islands)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 1 yr. (2.75%)	Total Cost with Interest (2.75%)
6	$1,250.36	$1,215.26	$8,600,000	7,067	7,271	$8,836,500	$8,836,500
7	$1,355.44	$1,314.49	$8,600,000	6,519	6,722	$8,836,500	$8,836,500
8	$1,567.50	$1,520.70	$8,600,000	5,637	5,811	$8,836,500	$8,836,500
9	$1,776.33	$1,723.67	$8,600,000	4,975	5,127	$8,836,500	$8,836,500
10	$1,968.86	$1,910.36	$8,600,000	4,488	4,626	$8,836,500	$8,836,500

Table A135. The total number of additional anglers and scuba divers needed to break - even, in five years, for $8.6 million during the high season at high cost in Bat Islands using 2.75% interest rate.

# Days	Anglers (Total Tax-13%)	Scuba Divers (Total Tax-13%) (Bat Islands)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 5 yrs. (2.75%)	Total Cost with Interest (2.75%)
6	$1,250.36	$1,215.26	$8,600,000	1,491	1,534	$1,864,466	$9,322,328
7	$1,355.44	$1,314.49	$8,600,000	1,376	1,418	$1,864,466	$9,322,328
8	$1,567.50	$1,520.70	$8,600,000	1,189	1,226	$1,864,466	$9,322,328
9	$1,776.33	$1,723.67	$8,600,000	1,050	1,082	$1,864,466	$9,322,328
10	$1,968.86	$1,910.36	$8,600,000	947	976	$1,864,466	$9,322,328

Table A136. The total number of additional anglers and scuba divers needed to break - even, in ten years, for $8.6 million during the high season at high cost in Bat Islands using 2.75% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Bat Islands)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 10 yrs. (2.75%)	Total Cost with Interest (2.75%)
6	$1,250.36	$1,215.26	$8,600,000	796	819	$995,362	$9,953,616
7	$1,355.44	$1,314.49	$8,600,000	734	757	$995,362	$9,953,616
8	$1,567.50	$1,520.70	$8,600,000	635	655	$995,362	$9,953,616
9	$1,776.33	$1,723.67	$8,600,000	560	577	$995,362	$9,953,616
10	$1,968.86	$1,910.36	$8,600,000	506	521	$995,362	$9,953,616

Table A137. The total number of additional anglers and scuba divers needed to break - even, in fifteen years, for $8.6 million during the high season at high cost in Bat Islands using 2.75% interest rate.

# Days	Anglers (Total Tax-13%)	Scuba Divers (Total Tax-13%) (Bat Islands)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 15 yrs. (2.75%)	Total Cost with Interest (2.75%)
6	$1,250.36	$1,215.26	$8,600,000	566	582	$707,429	$10,611,433
7	$1,355.44	$1,314.49	$8,600,000	522	538	$707,429	$10,611,433
8	$1,567.50	$1,520.70	$8,600,000	451	465	$707,429	$10,611,433
9	$1,776.33	$1,723.67	$8,600,000	398	410	$707,429	$10,611,433
10	$1,968.86	$1,910.36	$8,600,000	359	370	$707,429	$10,611,433

Table A138. The total number of additional anglers and scuba divers needed to break - even, in twenty years, for $8.6 million during the high season at high cost in Bat Islands using 2.75% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax- 13%) (Bat Islands)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 20 yrs. (2.75%)	Total Cost with Interest (2.75%)
6	$1,250.36	$1,215.26	$8,600,000	452	465	$564,777	$11,295,538
7	$1,355.44	$1,314.49	$8,600,000	417	430	$564,777	$11,295,538
8	$1,567.50	$1,520.70	$8,600,000	360	371	$564,777	$11,295,538
9	$1,776.33	$1,723.67	$8,600,000	318	328	$564,777	$11,295,538
10	$1,968.86	$1,910.36	$8,600,000	287	296	$564,777	$11,295,538

ADDITIONAL ANGLERS AND SCUBA DIVERS, ANNUAL COST AND TOTAL COST FOR BAT ISLANDS AT 2.75% INTEREST RATE – **LOW SEASON, LOW COST**

Table A139. The total number of additional anglers and scuba divers needed to break - even, in one, for $8.6 million during the low season at low cost in Bat Islands using 2.75% interest rate.

# Day	Anglers (Total Tax-13%)	Scuba Divers (Total Tax-13%) (Bat Islands)	Cost to Sink Vessel	# Anglers (2.75%)	# Anglers (2.75%)	Annual Cost 1 yr. (2.75%)	Total Cost with Interest (2.75%)
6	$229.76	$251.21	$8,600,000	38,460	35,176	$8,836,500	$8,836,500
7	$267.79	$292.81	$8,600,000	32,998	30,178	$8,836,500	$8,836,500
8	$306.08	$334.68	$8,600,000	28,870	26,403	$8,836,500	$8,836,500
9	$344.38	$376.55	$8,600,000	25,660	23,467	$8,836,500	$8,836,500
10	$382.93	$418.68	$8,600,000	23,076	21,106	$8,836,500	$8,836,500

Table A140. The total number of additional anglers and scuba divers needed to break - even, in five years, for $8.6 million during the low season at low cost in Bat Islands using 2.75% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Bat Islands)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 5 yrs. (2.75%)	Total Cost with Interest (2.75%)
6	$229.76	$251.21	$8,600,000	8,115	7,422	$1,864,466	$9,322,328
7	$267.79	$292.81	$8,600,000	6,962	6,367	$1,864,466	$9,322,328
8	$306.08	$334.68	$8,600,000	6,091	5,571	$1,864,466	$9,322,328
9	$344.38	$376.55	$8,600,000	5,414	4,951	$1,864,466	$9,322,328
10	$382.93	$418.68	$8,600,000	4,869	4,453	$1,864,466	$9,322,328

Table A141. The total number of additional anglers and scuba divers needed to break - even, in ten years, for $8.6 million during the low season at low cost in Bat Islands using 2.75% interest rate.

# Days	Anglers (Total Tax-13%)	Scuba Divers (Total Tax-13%) (Bat Islands)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 10 yrs. (2.75%)	Total Cost with Interest (2.75%)
6	$229.76	$251.21	$8,600,000	4,332	3,962	$995,362	$9,953,616
7	$267.79	$292.81	$8,600,000	3,717	3,399	$995,362	$9,953,616
8	$306.08	$334.68	$8,600,000	3,252	2,974	$995,362	$9,953,616
9	$344.38	$376.55	$8,600,000	2,890	2,643	$995,362	$9,953,616
10	$382.93	$418.68	$8,600,000	2,599	2,377	$995,362	$9,953,616

Table A142. The total number of additional anglers and scuba divers needed to break - even, in fifteen years, for $8.6 million during the low season at low cost in Bat Islands using 2.75% interest rate.

# Days	Anglers (Total Tax-13%)	Scuba Divers (Total Tax-13%) (Bat Islands)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 15 yrs. (2.75%)	Total Cost with Interest (2.75%)
6	$229.76	$251.21	$8,600,000	3,079	2,816	$707,429	$10,611,433
7	$267.79	$292.81	$8,600,000	2,642	2,416	$707,429	$10,611,433
8	$306.08	$334.68	$8,600,000	2,311	2,114	$707,429	$10,611,433
9	$344.38	$376.55	$8,600,000	2,054	1,879	$707,429	$10,611,433
10	$382.93	$418.68	$8,600,000	1,847	1,690	$707,429	$10,611,433

Table A143. The total number of additional anglers and scuba divers needed to break - even, in twenty years, for $8.6 million during the low season at low cost in Bat Islands using 2.75% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax- 13%) (Bat Islands)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 20 yrs. (2.75%)	Total Cost with Interest (2.75%)
6	$229.76	$251.21	$8,600,000	2,458	2,248	$564,777	$11,295,538
7	$267.79	$292.81	$8,600,000	2,109	1,929	$564,777	$11,295,538
8	$306.08	$334.68	$8,600,000	1,845	1,688	$564,777	$11,295,538
9	$344.38	$376.55	$8,600,000	1,640	1,500	$564,777	$11,295,538
10	$382.93	$418.68	$8,600,000	1,475	1,349	$564,777	$11,295,538

ADDITIONAL ANGLERS AND SCUBA DIVERS, ANNUAL COST AND TOTAL COST FOR BAT ISLANDS AT 2.75% INTEREST RATE – **LOW SEASON, HIGH COST**

Table A144. The total number of additional anglers and scuba divers needed to break - even, in one year, for $8.6 million during the low season at high cost in Bat Islands using 2.75% interest rate.

# Day	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Bat Islands)	Cost to Sink	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 1 yr. (2.75%)	Total Cost with Interest (2.75%)
6	$668.84	$633.75	$8,600,000	13,212	13,943	$8,836,500	$8,836,500
7	$779.68	$738.74	$8,600,000	11,333	11,962	$8,836,500	$8,836,500
8	$890.50	$843.70	$8,600,000	9,923	10,474	$8,836,500	$8,836,500
9	$1,003.80	$951.15	$8,600,000	8,803	9,290	$8,836,500	$8,836,500
10	$1,115.79	$1,057.29	$8,600,000	7,920	8,358	$8,836,500	$8,836,500

Table A145. The total number of additional anglers and scuba divers needed to break - even, in five years, for $8.6 million during the low season at high cost in Bat Islands using 2.75% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Bat Islands)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 5 yrs. (2.75%)	Total Cost with Interest (2.75%)
6	$668.84	$633.75	$8,600,000	2,788	2,942	$1,864,466	$9,322,328
7	$779.68	$738.74	$8,600,000	2,391	2,524	$1,864,466	$9,322,328
8	$890.50	$843.70	$8,600,000	2,094	2,210	$1,864,466	$9,322,328
9	$1,003.80	$951.15	$8,600,000	1,857	1,960	$1,864,466	$9,322,328
10	$1,115.79	$1,057.29	$8,600,000	1,671	1,763	$1,864,466	$9,322,328

Table A146. The total number of additional anglers and scuba divers needed to break - even, in ten years, for $8.6 million during the low season at high cost in Bat Islands using 2.75% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Bat Islands)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 10 yrs. (2.75%)	Total Cost with Interest (2.75%)
6	$668.84	$633.75	$8,600,000	1,488	1,571	$995,362	$9,953,616
7	$779.68	$738.74	$8,600,000	1,277	1,347	$995,362	$9,953,616
8	$890.50	$843.70	$8,600,000	1,118	1,180	$995,362	$9,953,616
9	$1,003.80	$951.15	$8,600,000	992	1,046	$995,362	$9,953,616
10	$1,115.79	$1,057.29	$8,600,000	892	941	$995,362	$9,953,616

Table A147. The total number of additional anglers and scuba divers needed to break - even, in fifteen years, for $8.6 million during the low season at high cost in Bat Islands using 2.75% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Bat Islands)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 15 yrs. (2.75%)	Total Cost with Interest (2.75%)
6	$668.84	$633.75	$8,600,000	1,058	1,116	$707,429	$10,611,433
7	$779.68	$738.74	$8,600,000	907	958	$707,429	$10,611,433
8	$890.50	$843.70	$8,600,000	794	838	$707,429	$10,611,433
9	$1,003.80	$951.15	$8,600,000	705	744	$707,429	$10,611,433
10	$1,115.79	$1,057.29	$8,600,000	634	669	$707,429	$10,611,433

Table A148. The total number of additional anglers and scuba divers needed to break - even, in twenty years, for $8.6 million during the low season at high cost in Bat Islands using 2.75% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Bat Islands)	Cost to Sink Vessel	# Anglers (2.75%)	# Scuba Divers (2.75%)	Annual Cost 20 yrs. (2.75%)	Total Cost with Interest (2.75%)
6	$668.84	$633.75	$8,600,000	844	891	$564,777	$11,295,538
7	$779.68	$738.74	$8,600,000	724	765	$564,777	$11,295,538
8	$890.50	$843.70	$8,600,000	634	669	$564,777	$11,295,538
9	$1,003.80	$951.15	$8,600,000	563	594	$564,777	$11,295,538
10	$1,115.79	$1,057.29	$8,600,000	506	534	$564,777	$11,295,538

ADDITIONAL ANGLERS AND SCUBA DIVERS, ANNUAL COST AND TOTAL COST FOR BAT ISLANDS AT 5.00% INTEREST RATE – **HIGH SEASON, LOW COST**

Table A149. The total number of additional anglers and scuba divers needed to break - even, in one year, for $8.6 million during the high season at low cost in Bat Islands using 5.00% interest rate.

# Day	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Bat Islands)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 1 yr. (5.00%)	Total Cost with Interest (5.00%)
6	$288.04	$309.49	$8,600,000	31,349	29,177	$9,030,000	$9,030,000
7	$328.10	$353.12	$8,600,000	27,522	25,572	$9,030,000	$9,030,000
8	$375.79	$404.39	$8,600,000	24,029	22,330	$9,030,000	$9,030,000
9	$422.31	$454.49	$8,600,000	21,382	19,869	$9,030,000	$9,030,000
10	$469.57	$505.32	$8,600,000	19,230	17,870	$9,030,000	$9,030,000

Table A150. The total number of additional anglers and scuba divers needed to break - even, in five years, for $8.6 million during the high season at low cost in Bat Islands using 5.00% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Bat Islands)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 5 yrs. (5.00%)	Total Cost with Interest (5.00%)
6	$288.04	$309.49	$8,600,000	6,896	6,418	$1,986,383	$9,931,916
7	$328.10	$353.12	$8,600,000	6,054	5,625	$1,986,383	$9,931,916
8	$375.79	$404.39	$8,600,000	5,286	4,912	$1,986,383	$9,931,916
9	$422.31	$454.49	$8,600,000	4,704	4,371	$1,986,383	$9,931,916
10	$469.57	$505.32	$8,600,000	4,230	3,931	$1,986,383	$9,931,916

Table A151. The total number of additional anglers and scuba divers needed to break - even, in ten years, for $8.6 million during the high season at low cost in Bat Islands using 5.00% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Bat Islands)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 10 yrs. (5.00%)	Total Cost with Interest (5.00%)
6	$288.04	$309.49	$8,600,000	3,867	3,599	$1,113,739	$11,137,393
7	$328.10	$353.12	$8,600,000	3,395	3,154	$1,113,739	$11,137,393
8	$375.79	$404.39	$8,600,000	2,964	2,754	$1,113,739	$11,137,393
9	$422.31	$454.49	$8,600,000	2,637	2,451	$1,113,739	$11,137,393
10	$469.57	$505.32	$8,600,000	2,372	2,204	$1,113,739	$11,137,393

Table A152. The total number of additional anglers and scuba divers needed to break - even, in fifteen years, for $8.6 million during the high season at low cost in Bat Islands using 5.00% interest rate.

# Days	Anglers (Total Tax-13%)	Scuba Divers (Total Tax-13%) (Bat Islands)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 15 yrs. (5.00%)	Total Cost with Interest (5.00%)
6	$288.04	$309.49	$8,600,000	2,876	2,677	$828,544	$12,428,155
7	$328.10	$353.12	$8,600,000	2,525	2,346	$828,544	$12,428,155
8	$375.79	$404.39	$8,600,000	2,205	2,049	$828,544	$12,428,155
9	$422.31	$454.49	$8,600,000	1,962	1,823	$828,544	$12,428,155
10	$469.57	$505.32	$8,600,000	1,764	1,640	$828,544	$12,428,155

Table A153. The total number of additional anglers and scuba divers needed to break - even, in twenty years, for $8.6 million during the high season at low cost in Bat Islands using 5.00% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Bat Islands)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 20 yrs. (5.00%)	Total Cost with Interest (5.00%)
6	$288.04	$309.49	$8,600,000	2,396	2,230	$690,086	$13,801,725
7	$328.10	$353.12	$8,600,000	2,103	1,954	$690,086	$13,801,725
8	$375.79	$404.39	$8,600,000	1,836	1,706	$690,086	$13,801,725
9	$422.31	$454.49	$8,600,000	1,634	1,518	$690,086	$13,801,725
10	$469.57	$505.32	$8,600,000	1,470	1,366	$690,086	$13,801,725

ADDITIONAL ANGLERS AND SCUBA DIVERS, ANNUAL COST AND TOTAL COST FOR BAT ISLANDS AT 5.00% INTEREST RATE – **HIGH SEASON, HIGH COST**

Table A154. The total number of additional anglers and scuba divers needed to break - even, in one year, for $8.6 million during the high season at high cost in Bat Islands using 5.00% interest rate.

# Day	Anglers (Total Tax-13%)	Scuba Divers (Total Tax-13%) (Bat Islands)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 1 yr. (5.00%)	Total Cost with Interest (5.00%)
6	$1,250.36	$1,215.26	$8,600,000	7,222	7,431	$9,030,000	$9,030,000
7	$1,355.44	$1,314.49	$8,600,000	6,662	6,870	$9,030,000	$9,030,000
8	$1,567.50	$1,520.70	$8,600,000	5,761	5,938	$9,030,000	$9,030,000
9	$1,776.33	$1,723.67	$8,600,000	5,084	5,239	$9,030,000	$9,030,000
10	$1,968.86	$1,910.36	$8,600,000	4,586	4,727	$9,030,000	$9,030,000

Table A155. The total number of additional anglers and scuba divers needed to break - even, in five years, for $8.6 million during the high season at high cost in Bat Islands using 5.00% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Bat Islands)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 5 yrs. (5.00%)	Total Cost with Interest (5.00%)
6	$1,250.36	$1,215.26	$8,600,000	1,589	1,635	$1,986,383	$9,931,916
7	$1,355.44	$1,314.49	$8,600,000	1,465	1,511	$1,986,383	$9,931,916
8	$1,567.50	$1,520.70	$8,600,000	1,267	1,306	$1,986,383	$9,931,916
9	$1,776.33	$1,723.67	$8,600,000	1,118	1,152	$1,986,383	$9,931,916
10	$1,968.86	$1,910.36	$8,600,000	1,009	1,040	$1,986,383	$9,931,916

Table A156. The total number of additional anglers and scuba divers needed to break - even, in ten years, for $8.6 million during the high season at high cost in Bat Islands using 5.00% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Bat Islands)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 10 yrs. (5.00%)	Total Cost with Interest (5.00%)
6	$1,250.36	$1,215.26	$8,600,000	891	916	$1,113,739	$11,137,393
7	$1,355.44	$1,314.49	$8,600,000	822	847	$1,113,739	$11,137,393
8	$1,567.50	$1,520.70	$8,600,000	711	732	$1,113,739	$11,137,393
9	$1,776.33	$1,723.67	$8,600,000	627	646	$1,113,739	$11,137,393
10	$1,968.86	$1,910.36	$8,600,000	566	583	$1,113,739	$11,137,393

Table A157. The total number of additional anglers and scuba divers needed to break - even, in fifteen years, for $8.6 million during the high season at high cost in Bat Islands using 5.00% interest rate.

# Days	Anglers (Total Tax-13%)	Scuba Divers (Total Tax-13%) (Bat Islands)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 15 yrs. (5.00%)	Total Cost with Interest (5.00%)
6	$1,250.36	$1,215.26	$8,600,000	663	682	$828,544	$12,428,155
7	$1,355.44	$1,314.49	$8,600,000	611	630	$828,544	$12,428,155
8	$1,567.50	$1,520.70	$8,600,000	529	545	$828,544	$12,428,155
9	$1,776.33	$1,723.67	$8,600,000	466	481	$828,544	$12,428,155
10	$1,968.86	$1,910.36	$8,600,000	421	434	$828,544	$12,428,155

Table A158. The total number of additional anglers and scuba divers needed to break - even, in twenty years, for $8.6 million during the high season at high cost in Bat Islands using 5.00% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax- 13%) (Bat Islands)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 20 yrs. (5.00%)	Total Cost with Interest (5.00%)
6	$1,250.36	$1,215.26	$8,600,000	552	568	$690,086	$13,801,725
7	$1,355.44	$1,314.49	$8,600,000	509	525	$690,086	$13,801,725
8	$1,567.50	$1,520.70	$8,600,000	440	454	$690,086	$13,801,725
9	$1,776.33	$1,723.67	$8,600,000	388	400	$690,086	$13,801,725
10	$1,968.86	$1,910.36	$8,600,000	350	361	$690,086	$13,801,725

ADDITIONAL ANGLERS AND SCUBA DIVERS, ANNUAL COST AND TOTAL COST FOR BAT ISLANDS AT 5.00% INTEREST RATE – **LOW SEASON, LOW COST**

Table A159. The total number of additional anglers and scuba divers needed to break - even, in one year, for $8.6 million during the low season at low cost in Bat Islands using 5.00% interest rate.

# Day	Anglers (Total Tax-13%)	Scuba Divers (Total Tax-13%) (Bat Islands)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers	Annual Cost 1 yr. (5.00%)	Total Cost with Interest (5.00%)
6	$229.76	$251.21	$8,600,000	39,302	35,946	$9,030,000	$9,030,000
7	$267.79	$292.81	$8,600,000	33,721	30,839	$9,030,000	$9,030,000
8	$306.08	$334.68	$8,600,000	29,502	26,981	$9,030,000	$9,030,000
9	$344.38	$376.55	$8,600,000	26,221	23,981	$9,030,000	$9,030,000
10	$382.93	$418.68	$8,600,000	23,581	21,568	$9,030,000	$9,030,000

Table A160. The total number of additional anglers and scuba divers needed to break - even, in five years, for $8.6 million during the low season at low cost in Bat Islands using 5.00% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Bat Islands)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 5 yrs. (5.00%)	Total Cost with Interest (5.00%)
6	$229.76	$251.21	$8,600,000	8,646	7,907	$1,986,383	$9,931,916
7	$267.79	$292.81	$8,600,000	7,418	6,784	$1,986,383	$9,931,916
8	$306.08	$334.68	$8,600,000	6,490	5,935	$1,986,383	$9,931,916
9	$344.38	$376.55	$8,600,000	5,768	5,275	$1,986,383	$9,931,916
10	$382.93	$418.68	$8,600,000	5,187	4,744	$1,986,383	$9,931,916

Table A161. The total number of additional anglers and scuba divers needed to break - even, in ten years, for $8.6 million during the low season at low cost in Bat Islands using 5.00% interest rate.

# Days	Anglers (Total Tax-13%)	Scuba Divers (Total Tax-13%) (Bat Islands)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 10 yrs. (5.00%)	Total Cost with Interest (5.00%)
6	$229.76	$251.21	$8,600,000	4,847	4,434	$1,113,739	$11,137,393
7	$267.79	$292.81	$8,600,000	4,159	3,804	$1,113,739	$11,137,393
8	$306.08	$334.68	$8,600,000	3,639	3,328	$1,113,739	$11,137,393
9	$344.38	$376.55	$8,600,000	3,234	2,958	$1,113,739	$11,137,393
10	$382.93	$418.68	$8,600,000	2,908	2,660	$1,113,739	$11,137,393

Table A162. The total number of additional anglers and scuba divers needed to break - even, in fifteen years, for $8.6 million during the low season at low cost in Bat Islands using 5.00% interest rate.

# Days	Anglers (Total Tax-13%)	Scuba Divers (Total Tax-13%) (Bat Islands)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 15 yrs. (5.00%)	Total Cost with Interest (5.00%)
6	$229.76	$251.21	$8,600,000	3,606	3,298	$828,544	$12,428,155
7	$267.79	$292.81	$8,600,000	3,094	2,830	$828,544	$12,428,155
8	$306.08	$334.68	$8,600,000	2,707	2,476	$828,544	$12,428,155
9	$344.38	$376.55	$8,600,000	2,406	2,200	$828,544	$12,428,155
10	$382.93	$418.68	$8,600,000	2,164	1,979	$828,544	$12,428,155

Table A163. The total number of additional anglers and scuba divers needed to break - even, in twenty years, for $8.6 million during the low season at low cost in Bat Islands using 5.00% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax- 13%) (Bat Islands)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 20 yrs. (5.00%)	Total Cost with Interest (5.00%)
6	$229.76	$251.21	$8,600,000	3,004	2,747	$690,086	$13,801,725
7	$267.79	$292.81	$8,600,000	2,577	2,357	$690,086	$13,801,725
8	$306.08	$334.68	$8,600,000	2,255	2,062	$690,086	$13,801,725
9	$344.38	$376.55	$8,600,000	2,004	1,833	$690,086	$13,801,725
10	$382.93	$418.68	$8,600,000	1,802	1,648	$690,086	$13,801,725

ADDITIONAL ANGLERS AND SCUBA DIVERS, ANNUAL COST AND TOTAL COST FOR BAT ISLANDS AT 5.00% INTEREST RATE – **LOW SEASON, HIGH COST**

Table A164. The total number of additional anglers and scuba divers needed to break - even, in one year, for $8.6 million during the low season at high cost in Bat Islands using 5.00% interest rate.

# Day	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Bat Islands)	Cost to Sink	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 1 yr. (5.00%)	Total Cost with Interest (5.00%)
6	$668.84	$633.75	$8,600,000	13,501	14,249	$9,030,000	$9,030,000
7	$779.68	$738.74	$8,600,000	11,582	12,224	$9,030,000	$9,030,000
8	$890.50	$843.70	$8,600,000	10,140	10,703	$9,030,000	$9,030,000
9	$1,003.80	$951.15	$8,600,000	8,996	9,494	$9,030,000	$9,030,000
10	$1,115.79	$1,057.29	$8,600,000	8,093	8,541	$9,030,000	$9,030,000

Table A165. The total number of additional anglers and scuba divers needed to break - even, in five years, for $8.6 million during the low season at high cost in Bat Islands using 5.00% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Bat Islands)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 5 yrs. (5.00%)	Total Cost with Interest (5.00%)
6	$668.84	$633.75	$8,600,000	2,970	3,134	$1,986,383	$9,931,916
7	$779.68	$738.74	$8,600,000	2,548	2,689	$1,986,383	$9,931,916
8	$890.50	$843.70	$8,600,000	2,231	2,354	$1,986,383	$9,931,916
9	$1,003.80	$951.15	$8,600,000	1,979	2,088	$1,986,383	$9,931,916
10	$1,115.79	$1,057.29	$8,600,000	1,780	1,879	$1,986,383	$9,931,916

Table A166. The total number of additional anglers and scuba divers needed to break - even, in ten years, for $8.6 million during the low season at high cost in Bat Islands using 5.00% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Bat Islands)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 10 yrs. (5.00%)	Total Cost with Interest (5.00%)
6	$668.84	$633.75	$8,600,000	1,665	1,757	$1,113,739	$11,137,393
7	$779.68	$738.74	$8,600,000	1,428	1,508	$1,113,739	$11,137,393
8	$890.50	$843.70	$8,600,000	1,251	1,320	$1,113,739	$11,137,393
9	$1,003.80	$951.15	$8,600,000	1,110	1,171	$1,113,739	$11,137,393
10	$1,115.79	$1,057.29	$8,600,000	998	1,053	$1,113,739	$11,137,393

Table A167. The total number of additional anglers and scuba divers needed to break - even, in fifteen years, for $8.6 million during the low season at high cost in Bat Islands using 5.00% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Bat Islands)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 15 yrs. (5.00%)	Total Cost with Interest (5.00%)
6	$668.84	$633.75	$8,600,000	1,239	1,307	$828,544	$12,428,155
7	$779.68	$738.74	$8,600,000	1,063	1,122	$828,544	$12,428,155
8	$890.50	$843.70	$8,600,000	930	982	$828,544	$12,428,155
9	$1,003.80	$951.15	$8,600,000	825	871	$828,544	$12,428,155
10	$1,115.79	$1,057.29	$8,600,000	743	784	$828,544	$12,428,155

Table A168. The total number of additional anglers and scuba divers needed to break - even, in twenty years, for $8.6 million during the low season at high cost in Bat Islands using 5.00% interest rate.

# Days	Anglers (Total Tax-	Scuba Divers (Total Tax-13%) (Bat Islands)	Cost to Sink Vessel	# Anglers (5.00%)	# Scuba Divers (5.00%)	Annual Cost 20 yrs. (5.00%)	Total Cost with Interest (5.00%)
6	$668.84	$633.75	$8,600,000	1,032	1,089	$690,086	$13,801,725
7	$779.68	$738.74	$8,600,000	885	934	$690,086	$13,801,725
8	$890.50	$843.70	$8,600,000	775	818	$690,086	$13,801,725
9	$1,003.80	$951.15	$8,600,000	687	726	$690,086	$13,801,725
10	$1,115.79	$1,057.29	$8,600,000	618	653	$690,086	$13,801,725

VITA

After graduating from Nacogdoches High School in Nacogdoches, Texas, in 2007, Josué González joined the United States Navy as a Hospital Corpsman. He then attended the Naval Hospital Corps School in Great Lakes, Illinois from 2007 to 2008. Upon completion, he was stationed at Naval Medical Center Portsmouth (NMCP) until 2010, where he worked in the Emergency Department. After leaving NMCP in 2010, he attended Field Medical Training Battalion – West in California and was later assigned to the 5th Marine Regiment, 1st Marine Division, 3rd Battalion, 5th Marines in Camp Pendleton. In 2010, Josué deployed to Sangin, Afghanistan for 8 months. Upon returning from his deployment in 2011, Josué was honorably discharged in August 2012. In the spring of 2013, Josué began his academic career at Stephen F. Austin State University (SFASU) and received his Bachelor of Science in Forestry in December 2017. He began his graduate career with the SFASU forestry program in January 2018 and received his Master of Science in Forestry in December 2020.

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