

Southgate Coastal Reserve Financial Planning Analysis



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SOUTHGATE COASTAL RESERVE FINANCIAL PLANNING ANALYSIS*

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Executive Summary

This report provides information and a financial planning framework useful for considering the development of the Southgate property as the Southgate Coastal Reserve (SCR). We explore ways in which a financial return might be realized from the human uses and activities that currently occur at SCR or that might be promoted there in the future, given that the main goal is to conserve the Southgate property as a natural area. We consider experiences from the management of other coastal and marine protected areas, and we refer to ideas that have been put forward by other analysts for generating sustainable financing for protected areas.

When planning for the development of a coastal reserve, it is critical to understand and make use of the connections between a property and other natural areas. In the specific case of SCR, there is an obvious ecological connection between it and the newly established East End Marine Park (EEMP). SCR is positioned geographically to serve as one of the main gateways into EEMP. From a financial perspective, there may be mutual benefits to both natural areas from the explicit articulation of the many existing ecological and human connections.

We discuss first some real-world examples of ways in which protected areas can be made to be financially self-sufficient. We review the results of a recent worldwide survey of marine protected areas to develop a reference point for the financial characteristics of a protected area in the Caribbean. We review the potential for the development and growth of eco-tourism on St. Croix. We describe the general financial characteristics of a hypothetical gift shop, and we outline a number of alternative potential sources of income, including endowment interests, conservation grants, and a “Friends of Southgate” organization, among others.

In addition to a review of the relevant literature and a description of human uses at Southgate, we conduct a financial planning analysis, summarizing estimates of the revenues and costs of activities that might be undertaken to promote ecotourism and to manage SCR for its primary purpose of nature conservation. The financial analysis mirrors the general recommendations put forward by THE COAST & HARBOR INSTITUTE pertaining to the development of a nature reserve at Southgate. The analysis can be updated as new data emerge, and it can be used to conduct simulations, where data are unavailable or uncertain.

We expect that about one third of the annual income for SCR may need to be derived from individual or corporate contributions. The establishment of a small endowment and the organization of a Friends group are both central needs. A Science & Education program could bring in another third of the annual income, mainly through fees for the use of a small boat for various purposes and from a minimal student fee. An eco-heritage tour program would provide about one-quarter of the annual income. A gift shop, while unlikely to be a source of income of the same magnitude as these other sources, may be important to establish because it would attract interest and encourage participation in other revenue generating activities.

Capital infrastructure will be required in the form of a Reserve Manager’s cottage, a boat, trails, landscaping equipment, bird blinds, and, potentially, an Interpretive Center. Both the Interpretive Center and the cottage are critical to the long-term success of SCR, in order to build human interest and participation and to ensure that incompatible activities do not compromise the primary purpose of a nature reserve. Our planning framework suggests that the potential exists for positive cash flows from the operation of the reserve. It will be important to ensure that all sources of costs, including insurance, monitoring and enforcement, trailblazing, et cetera, are accounted for fully.

I. Introduction

Coastal protected areas are created to preserve unique ecological features or systems; to conserve commercially important fish, bird, or wildlife stocks; as baselines or controls for scientific research projects; and to promote non-consumptive activities, such as education, recreational hiking, camping, boating, and diving. Many of these activities are called “non-market” uses because, even though they are valuable in an economic sense, they are not traded in established markets. Consumptive or exploitative uses, such as mineral extraction, commercial fish harvests, and waste disposal, typically are curtailed or prohibited in a protected area.

Until recently, however, very few business or financial analyses have been conducted to demonstrate the economic rationale for creating coastal protected areas. Commonly, protected areas are justified only for ecological reasons. In many cases, a list of human activities is drawn up without attention to the size of the economic benefits associated with those activities or their potential impacts.

The lack of attention to economic considerations can be problematic for two reasons. First, unregulated activities may impose costs on participants in other activities or on those who benefit from the features of a natural system—even if they don’t use it directly. For example, excessive numbers of visitors to a natural area could lead to habitat degradation for certain species. One approach to this problem is to estimate the size of these costs and use this information to regulate the levels of activities in an acceptable way. In selected cases and where resources are available, analysts have now begun to employ specialized techniques—called non-market valuation—to develop such estimates (Hoagland *et al.* 1995).¹

A second—and even more problematic—concern is the lack of financial resources available for monitoring, enforcing, or otherwise operating a protected area—thereby resulting in the proverbial “paper park.” An estimated 75 percent of the 135 marine and coastal protected areas in the wider Caribbean region have insufficient resources for management (van’t Hof 1992). Increasingly, analysts are crafting budgets for protected areas and conducting development planning to identify potential markets and other sources of funding.

In this report, we address the second general concern. We explore ways in which a privately owned protected area, such as the Southgate Coastal Reserve (SCR), might realize a financial return from some of the activities that currently occur at the property or that might be promoted in the future. We assume that the main purpose is to conserve the property as a natural area.² Many of the unregulated uses that are inconsistent with that purpose will have to be curtailed or prohibited. We consider experiences from the management of other coastal and marine protected areas, and we refer to ideas that have been put forward by other analysts for generating sustainable financing for protected areas.

When contemplating the development of a property such as Southgate as a nature reserve, it is absolutely essential to understand and make use of the connections between the property and

¹ Data that emerge from these kinds of analyses can be used in a cost-benefit framework to identify the economically optimal mix of human uses and activities. We do not conduct a cost-benefit analysis here. Instead, we assume that the primary use of the Southgate property is as a nature reserve, and only those types and levels of human activities consistent with that goal will be permitted on the property.

² The flora and fauna, habitat, and ecological character of the Southgate property and surrounding areas are surveyed and discussed in depth in a set of companion reports authored by William and Elizabeth Gladfelder.

other natural areas. Ecological connections are paramount, but human interests and activities may be enhanced through explicit linkages across reserves. Importantly, it may be possible to incorporate linkages into reserve design. There is an obvious ecological connection between SCR and the newly established East End Marine Park (EEMP) that should be exploited in this respect. Located on the north coast of St. Croix and on the western boundary of EEMP, SCR is naturally positioned to serve as one of the main gateways into EEMP. From a financial perspective, there may be mutual benefits to both natural areas from the articulation of explicit ecological and human connections.

The final section of this report comprises a business analysis, summarizing our estimates of the revenues and costs of activities that might be undertaken to promote tourism and to manage SCR for its primary purpose of nature conservation. The business analysis mirrors the general recommendations put forward by The Coast & Harbor Institute pertaining to the development of a nature reserve at Southgate. Our analysis describes the structure and content of a business planning framework, which has been developed for SCR. The planning framework incorporates data that has been drawn from a number of sources, including published and unpublished reports, personal communications, and educated guesses. The framework has been designed so that it can be updated as new data emerge. The framework also can be used to conduct simulations, where data are unavailable or uncertain.

II. Protected Area Self-Sufficiency

As a consequence of the chronic problem of inadequate funding, managers are now paying increasing attention to the potential for earning financial returns on the operations of a protected area in order to move towards self-sufficiency and sustainability (*viz.*, Hooten and Hatziolos 1995; Davis 1997). These returns might be realized in the form of user fees for various activities, such as touring, sales of souvenirs, donations from a group of associates, who could be both local neighbors and visitors, or the establishment of an endowment (van't Hof 1989). Some trustees or managers of protected areas have begun to explore innovative arrangements with other protected areas, government coastal zone management programs, nature conservancy organizations, and with other sectors of the tourist industry, such as hotels and nature watching companies.

A strategy for earning financial returns might generate funds for a limited number of uses, by establishing markets, while permitting the benefits from other non-market uses to continue to be realized—even if they are not involved explicitly in generating financial returns (Hodgson and Dixon 1992). In order to enhance the local political feasibility of such a scheme—and to capture more of the value of a coastal reserve, some jurisdictions have sought to establish a differential pricing regime, charging one set of prices for local users and higher set for non-local tourists (Lindberg 1990; Broadus 1988).

Some real-world examples of ways in which protected areas attempt to become self-sufficient include the following. Note that these examples are not necessarily directly transferable to the Southgate Coastal Reserve, but they are representative of current approaches and ideas.

- ***Seaflower Biosphere Reserve, Colombia.*** This reserve, established around an archipelago in the southwestern Caribbean, has developed a detailed strategy for self-sufficiency (van't Hof and Connolly 2002). Potential sources of income include the allocation to the reserve of some of the receipts from a national “tourist tax”; the establishment of an endowment with

grant monies from foreign aid donors—potentially through debt-for-nature swaps—and conservation organizations; the implementation of a user fee for protected area use; the imposition of a resource extraction fee for large-scale commercial fishing; and the collection of tolls, real estate taxes, and construction license fees. Many of these approaches will take time to implement, and it is too early to determine whether this strategy has been successful.

- ***Saba Marine Park, Netherlands Antilles.*** This marine protected area, established around the island of Saba in the northeastern Caribbean, was one of the first to investigate the possibility of self-sufficiency (van't Hof and Buchan 1995). The protected area is administered by a private foundation, and income is derived from visitor fees for scuba divers and snorkelers (\$2.00 per dive), income from the operation of a decompression facility, donations, souvenir sales (including a guidebook), and an initial government subsidy. The private foundation can apply for grants from private organizations or governments, and an endowment was established to cover shortfalls in other sources of income. The Saba Marine Park is one of the earliest examples of a self-sufficient marine protected area.
- ***The National Trust, United Kingdom.*** Approximately 20 percent of the coastal lands in England, Wales, and Northern Ireland are owned and managed by the National Trust, a non-governmental organization established in the United Kingdom in 1895. Intertidal lands adjacent to these coastal properties are leased from the UK government. The coastal lands are managed primarily to ensure public access to the coast, but also for conservation purposes. The majority of income is derived from donations to the National Trust's *Neptune Coastline Campaign*, which was initiated in 1965 and has raised \$58 million to date (Davis 2003).
- ***Palmyra Atoll, United States.*** Palmyra Atoll is an incorporated territory of the United States located about halfway between Hawaii and American Samoa. It is privately owned and managed as a nature preserve by the Nature Conservancy (TNC). In 2001, the lagoons and surrounding territorial sea were designated as a national wildlife refuge, administered by the US Fish and Wildlife Service. TNC purchased the atoll for \$30 million from a private family in 1999 and subsequently sold a portion of the land to the US government to help retire the debt. TNC uses the atoll as a specialized ecotourism site, where private donors are accorded exclusive access to fish for bonefish in the preserve's lagoon (Davis 2003).
- ***And Atoll, Federated States of Micronesia.*** And Atoll is privately owned by a wealthy family in the State of Pohnpei. A marine protected area was established through a partnership between the family, the Conservation Society of Pohnpei, and the government. The purpose of the MPA is to conserve the fisheries. The government provides enforcement of the fisheries rules, which include seasonal and permanent no-take zones. Income is derived from the establishment of an ecotourism hostel and through the levying of boat landing fees (Davis 2003).

III. General Financial Characteristics of Caribbean MPAs

A recent worldwide survey of marine protected areas (MPAs) provides a reference point for the financial characteristics of a protected area in the Caribbean (Gravestock 2002).³ Notably, there are no “mega-parks” (more than 1 million visitors per year) in the Caribbean. Most Caribbean

³ Out of a worldwide sample of 79 MPAs, ten were located in the Caribbean (Gravestock 2002).

MPAs do have significant numbers of visitors each year (a median visitation of 21,500 visitors); but there is substantial variation across sites (the 95 percent confidence interval ranges from 8,291 to 53,038 visitors).

Many Caribbean MPAs have been established to attract eco-tourists and to earn income from visits. The median income for Caribbean MPAs is \$224,880; this amount translates into a median income of \$10 per hectare or \$9 per visitor. Income can be broken down by source as follows: government funding (52%); visitor fees (22%); foreign aid (11%); domestic donations (1%); and other sources, which include grants from charitable foundations, interest from trust funds, and carry-overs from previous years (13%). Other sources of income, such as gift shops, were not considered in the study.

IV. Eco-Tourism Potential on St. Croix

Tourism accounts for more than 70 percent of all economic activity in the US Virgin Islands (Seybert 2002). Tourist visits tend to be sensitive to general economic conditions in the United States and, to a much lesser extent, in Europe. Tourism also is dependent upon airline and cruise ship scheduling and tourism promotion efforts. Major environmental events, such as Hurricane Hugo in September 1989, tend to have a negative impact on tourism, but this effect is probably short-lived. The extensive media coverage of looting and social unrest after the hurricane may have been a leading reason why tourist visits fell after the storm.

The broad historical trends for tourist visits to St. Croix appear to be flat (Figure 1a). St. Croix receives fewer than 20 percent of the visitors to USVI. As an example, Figure 1a depicts monthly visitation from January 1979 to December 2000 at the Christiansted Fort, a National Historic Site near the Southgate Coastal Reserve. Monthly visitation has stayed relatively stable over this period (mean = 9,339 visitors; median = 9,048 visitors).⁴ Figure 1b takes a closer look at the post-Hugo trend. There may be a decade-long cycle in the data, although the series is too short to determine whether this cycle is statistically significant. If it exists, this long cycle could be tied to economic trends in North America. The tourist season lasts the seven months from October to April, and many of the peak visitations shown in Figure 1 occur in March.

Figure 2 depicts annual air and cruise passenger arrivals and collections of hotel room taxes during 1990-2002. These data indicate a flat trend in tourist visits. On average, air tourists spend \$90 per day on St. Croix above lodging expenses, and they remain on the island for about ten days. Cruise ship passengers may spend \$200 per day on St. Croix, and most of their spending is on gifts or special purchases (Seybert 2002). An important issue faced by St. Croix is that a number of cruise ships recently have discontinued visits to the island. It is unclear whether air passenger arrivals will take up the slack, although an expansion of the runway at the airport is planned.

⁴ Similar results are obtained from an examination of visitation to the Buck Island Reef National Monument, although the time series extends only to December 1997. Figure 1a depicts an interesting—but not yet fully explained—phenomenon concerning the variability of visitation over time. Assuming that there has been no change in the way in which visits are counted, prior to Hurricane Hugo, the monthly visitation was much more variable than it was in the period after the hurricane ($S_{\text{pre-Hugo}} = 5,008$; $S_{\text{post-Hugo}} = 1,159$). One possible explanation is that there is a consistent baseline level of local Crucian visitors to the Fort. According to this hypothesis, pre-Hugo tourist visits are superimposed on the local visitation as large spikes. Post-Hugo, tourist visits may not have recovered to the same levels as those occurring pre-Hugo.

Tyson and Bacci (1996) compile four years of data during the mid-1990s focusing on tourist visits to heritage and natural history sites (Table 1 reproduced from the authors). The Tyson and Bacci study demonstrates that these kinds of sites on St. Croix are capable of drawing significant numbers of visitors. Indeed, their estimates may be low, as the National Park Service estimates of tourist visitation at the Christiansted Fort are as much as eight to eleven times higher during the same period.⁵

Seybert (2002) finds little information about areas visited by tourists on St. Croix. The cruise ship landing is located on the western end of the island at Frederiksted, and most of the tour companies focus on activities near the harbor for cruise passengers. Tour companies provide hiking (~\$35 per person); horseback riding (~\$50 per person); sea kayaking (~\$45 per person); recreational fishing (~\$350-550 for a half-day offshore); snorkeling (~\$25-55 for a half day); and scuba diving (~\$70-85 for a two-tank boat dive).⁶ Although the demand for good bird guides apparently has been growing in USVI, no bird-watching tour companies have been established on St. Croix.

V. Potential for Income from Market and Non-market Activities

We have identified a wide variety of activities that occur at the Southgate site (Table 2).⁷ All individuals engaged in existing activities currently assume that there is free access to the area. Table 2 provides one way of organizing these activities. Some activities are market oriented, meaning that they harvest or use resources (such as fish or shellfish) that may be sold into a market. Other activities have no established markets. We describe below the potential for establishing markets for some non-market activities.

As a further classification, some non-market activities have little physical or ecological effect on Southgate resources, and we describe these as non-consumptive. Other non-market activities may have an adverse effect on the area at current or expanded levels, and we describe these activities as consumptive. A final set of non-market activities have been observed at Southgate appear in Table 2, but we expect that they are rare or infrequent, and we will ignore these activities in the following discussion.

For completeness, we also identify “passive values.” Passive values include non-market economic values that are associated with no physical use of Southgate. Such values may arise through preservation of the area for future use by the current generation (option value), for future use by subsequent generations (bequest value), or through the understanding that ecological services are being preserved (existence value). Income reflecting these values may be derived only from donations, such as government or foundation grants, or membership in a hypothetical “Friends of Southgate Coastal Reserve” organization.

In Table 3, we identify those uses that we believe have potential for providing a source of income to the Southgate Coastal Reserve. Although several uses have potential, those

⁵ Tyson and Bacci (1996) conclude from an examination of the data that tourist visits to heritage sites on St. Croix exhibited a rising trend during 1993 to 1996. This apparent trend, which is contrary to other data showing a flat trend, may be based upon a surge in cruise ship visits during that time. These visits have now dropped significantly.

⁶ A bicycle rental operation that was in business in Frederiksted has recently closed its doors, apparently due to the reduced number of cruise ship visits (Gladfelter, p.c., 2003).

⁷ I thank Elizabeth Gladfelter for generating the initial list of human activities at the Southgate property.

highlighted with shading are likely to provide larger amounts of income. We describe these uses briefly here, and, in the discussion below relating to a business strategy, we develop estimates of income from some of these activities.

A. Market Activities

- ***Fishing and Shellfishing.*** Market uses include commercial fishing, charterboat fishing, and sea turtle hunting and egg collecting (the latter use involves a black market). There is no potential for deriving an income for the Southgate Coastal Reserve from these uses. Sea turtle hunting and egg collecting is prohibited by law, and sea turtles are legally protected as threatened or endangered species. Commercial fishing is regulated by the USVI Department of Planning and Natural Resources, within territorial waters out to three nautical miles, and by the Caribbean Fishery Management Council, organized under the US federal Magnuson-Stevens Act, beyond that limit. Several regulations, including fishery reserves, quotas, size limits, and gear restrictions, have been implemented with respect to reef fish and pelagic species. Corals cannot be collected without a permit. None of the regulations involve so-called market-based approaches, such as landings taxes or individually transferable quotas. It may be possible to include marine species in a broad ecosystem definition for SCR, which would include the East End Marine Park. The St. Croix Environmental Association might seek a voice in the management of adjacent marine areas, but, at present, both commercial and charterboat fishing activities occur in areas outside the jurisdiction or control of Southgate.

B. Non-market, Non-consumptive Activities

- ***Beach visits.*** There is an historical pattern of significant levels of use of the Southgate beach for a wide range of activities, including sunbathing, walking, swimming, snorkeling, fishing, picnics, parties, and kite flying. Many of the beach visitors are guests at the adjacent hotel; others are local citizens who have been visiting the beach for many years. Access to beaches in the US Virgin Islands is an historic public right, therefore, it is not possible to charge the public for access to the Southgate beach. Other Caribbean protected areas (*e.g.*, Saba) have experimented with programs to restrict access. User fees (\$2.00 per visitor per day) are collected at these areas to generate a source of income.
- ***Eco-heritage tours.*** SCR has excellent potential as the venue for guided tours, particularly those focusing on the historic plantation structures and the diversity of bird species.

SCR is located near historical resources, including the grounds and structures of several sugar and cotton plantations dating to the 18th century (Tyson and Bacci 1996). Two of these plantations, including Green Kay and Coakley Bay, are on the US National Register of Historic Preservation. The Southgate Farm Plantation, now a private condominium, includes a windmill, factory ruins, a well tower, and other structures.

The Southgate Pond is well known as an important habitat for the avifauna of St. Croix. Gladfelter and Gladfelter (2003) report that nearly the entire regular avifauna of St. Croix has been observed at Southgate Pond, and one-third of these species have nested near the pond. Southgate Pond is recognized by ecologists as one component of a network of wetland areas on St. Croix, each component of which is more or less preferred depending upon fluctuations in climatic conditions.

Currently, no historic or bird-watching tour operators are in business on St. Croix, but we believe that the establishment of an eco-heritage tour service focusing on Southgate Pond could be very attractive to tourists and serious birders. Bird-watching is now the fastest growing form of eco-tourism in the United States, and bird-watchers there spend upwards of \$34 billion a year on their activity (Weisul 2002).⁸

- **Hiking Access.** This activity would involve hiking on trails and boardwalks in the upland area of the SCR. Over the three phases, the business plan includes a budget for establishing trails, laying boardwalks where appropriate, and construction of bird-blinds. We do not expect to charge hikers or nature lovers a user fee for their use of the site, unless they are part of a guided tour. Because SCR is to be a reserved natural area, some activities such as the operation of off-road vehicles, horseback riding, and certain other disruptive activities must be curtailed substantially or prohibited. Allowing public access to trails will require some level of monitoring, enforcement, trail maintenance, and cleanup.
- **Boat Storage.** The beach has been used upon occasion for private boat storage. A decision must be made about the compatibility of this activity with other uses that depend upon the conservation of the local ecosystem. If it is determined that boat storage is acceptable, then an annual boat storage fee might be negotiated with boat owners. We believe that it is unlikely that boat owners would continue to store their boats at Southgate if faced with a storage fee. Consequently, this activity is unlikely to result in any income.
- **Scientific Research.** The potential exists for programs of scientific observation and experimentation and for college and graduate teaching about tropical coastal-marine ecosystems. We discuss the features of a potential Science & Education program in the business strategy section below. The management plan for the East End Marine Park contemplates a program of research permits and permit fees to the marine environment. Such a program is unlikely to be a significant source of funding, for either EEMP or SCR, and it could discourage research efforts. Programs of scientific research are likely to enhance human interest in the natural features of both reserves. Consequently, policies to encourage science are likely to lead to higher levels of income from other revenue generating activities, such as donations, membership in a Friends organization, or attendance on eco-heritage tours.
- **Education.** While the establishment of a marine laboratory or a school may not be feasible in the near-term, the Southgate property would be an ideal locus for use by schools and universities for fieldwork. Further, tourists residing at the local hotels might be attracted to one or more short courses or as participants in longer running experiments or archaeological excavations. The financial terms of such a program would need to be negotiated with the local hotels. Because this is the kind of use that is likely to generate a deeper understanding of the Southgate ecosystem, it would make sense to waive any fees for these types of activities. We recommend a minor fee for graduate students on weekly scientific visits. This fee would be used to cover administrative costs.

⁸ In 2000, a US Forest Service survey found that 71 million people were engaged in bird-watching, an increase of nearly 240 percent over the last two decades. Serious birders increased in number from 42 to 46 million during 1995 to 2000. The average bird watcher is well-educated, has significant amounts of discretionary income, and is around 52 years old.

- ***Kayaking and Sailing.*** Kayaking and sailing have taken place for years in the marine waters off the Southgate Beach. Apparently there is an “illegal” kayak landing on Green Cay. For the most part, these activities are beyond the reach of Southgate, and so there is limited potential for generating income.

C. Non-market, Consumptive Activities

- ***Brine and Gray Water Disposal.*** A local desalination plant disposes excess brine waters on the Southgate property. A determination must be made about the legality of this disposal, in particular whether it is regulated by provisions of the US federal Clean Water Act and whether it is in compliance with any federal or territorial regulations. A further determination must be made about the compatibility of this activity with other uses that depend upon the conservation of the local ecosystem. There may be some potential for private negotiations over an effluent fee that might be charged to the plant operator. Without additional information, it is not possible to determine whether such a negotiation could take place and what the size of the fee might be. One of the nearby local hotel operators has inquired about the possibility of disposing of gray water on the property. Further investigation is needed to determine the feasibility of handling gray water and the carrying capacity of the property for such effluent. Disposal of hotel gray water might lead to an agreement to provide other services to SCR, such as the provision of classroom, laboratory, or dock space.
- ***Tipping.*** Over the years, the Southgate property has been used for the disposal of a variety of solid and hazardous wastes. The waste generating the largest volumes may be the cellar dirt that is generated during building construction. If this disposal is not incompatible with the purposes of Southgate, a fee could be negotiated with builders to permit the continued dumping of cellar dirt. Without additional information, it is not possible to determine whether this activity should be permitted to continue, and, if so, what the size of the fee might be. It is likely that the St. Croix Environmental Association will want to ban the disposal of other forms of solid waste, such as garbage or litter, and hazardous waste, such as petroleum products.
- ***Automobile Driving.*** The bed of Southgate Pond is occasionally used during the dry season for thrill antics by the drivers and passengers of off-road vehicles. It is likely that the St. Croix Environmental Association will want to ban this activity.

VI. Potential for Income from a Gift Shop

Another source of income is from the sale of gifts and memorabilia from a gift shop. A gift shop might be located in the lobby of one of the adjacent hotels, in the airport, at the St. Croix Environmental Association’s headquarters, or in a future Interpretive Center at the Southgate property. The gift shop would sell gifts that relate specifically to Southgate or more generally to St. Croix or to the science or natural history of Caribbean coastal-marine environment. Until a gift shop is established, it is difficult to predict the size of sales or the success of its operations.

One potentially useful source of information to begin thinking about a Southgate Gift Shop as a source of income is the descriptive industry statistics compiled by the Museum Store Association (MSA 2002). MSA compiles statistics on the sales and operations of non-profit museum stores in the United States; these statistics are broken down by type of store.

Most museum stores operate year-round, and the median number of weekly operating hours is 45. If a membership program exists, then members are typically accorded admission-free access to the store. There is typically only a weak relationship between the population of the area in which the museum is located and attendance at the museum (and therefore visits to the museum store).

We focus here on reporting general information concerning both natural history and science museum stores with gross sales under \$35,000, which may be a good reference for a gift shop that is just starting up (Table 4).

VII. Potential Alternative Sources of Income

A wide range of alternative potential funding sources for protected areas have been investigated by a number of organizations and researchers (van't Hof and Connolly 2002; CFA 2002; UNEP 2000; Geoghegan 1994). Van't Hof and Connolly (2002) provide the best recent summary of these sources. Many of these potential funding sources assume government ownership or management of a protected area or require some form of government involvement. We review some of these potential sources here. Some of these potential funding sources are relevant to SCR, and we discuss those sources in greater detail below.

- ***Endowment interest.*** This source of income requires a special gift, multiple contributions to a capital campaign, or smaller donations that are received over a longer period of time. The principal of a small endowment would remain in an interest-bearing bank account, or it could be invested in low-risk vehicles, such as certificates of deposit. A larger endowment might need to be managed by a trustee, who could invest it in a range of vehicles. The interest on an endowment could serve as a source of income for the reserve.
- ***Conservation grants.*** Conservation grants involve the donation of land or other property for the sole purpose of nature conservation. These donations may have favorable tax consequences, and they insure the donor that their property will be used for a specific purpose in perpetuity. The viability of a conservation grant may require the existence of an organization or a trustee to ensure that the intent of the grant is carried out.
- ***Membership organization.*** Also known as “Associates” or “Friends” programs, a membership organization would assemble a group of individuals who are supporters of the activities at the reserve. Typically, payment of a small annual fee is required for membership. Members may receive special treatment, such as reduced fees for activities, special educational seminars, cruises, eco-tours, and they might be tapped for their expertise or advice in important decisions faced by reserve managers. A local USVI example is the “Friends of the National Park of St. John” (TNC 2002).
- ***Individual or corporate donations.*** Important sources of income to a reserve are donations from individuals or firms. As a not-for-profit organization, such donations typically would receive favorable tax treatment. To motivate donations, development or marketing efforts may be necessary. Donations could be treated as income, or they could be plowed into an endowment.
- ***Corporate sponsorship.*** Commercial firms may also have an interest in acting as a sponsor for a nature reserve if their sponsorship sends a signal to their customers or potential equity

investors about the nature of their activities. As such, corporate sponsorship may be seen as a form of advertising for the corporation. The attractiveness of corporate sponsorship might be diluted if it is spread over a number of firms, and sponsorship may vary from year to year as a function of general economic or specific market conditions.

- ***In-kind contributions.*** In-kind contributions are a type of individual or corporate contribution, where the contribution takes the form of volunteer efforts, a tangible gift, such as a boat, landscaping equipment, a house, or a donation of securities. Depending upon their relevance to the goals of the nature reserve, some in-kind contributions are useful for undertaking reserve activities, while others must be converted into cash.
- ***Tax incentives.*** There are a wide variety of potential tax incentives that could be used to facilitate the establishment and the operation of a nature reserve. At a minimum, incorporation as a not-for-profit entity implies relief from corporate and property taxes.
- ***Lotteries and raffles.*** A lottery or raffle could be organized to generate money for a nature reserve. The lottery works by attracting ticket purchases that, in aggregate, exceed the cost of the prize. For a nature reserve, prizes might be related to the purposes of the reserve, such as a scuba diving vacation or a dinner cruise.
- ***Debt for nature swaps.*** A debt for nature swap involves an arrangement through which a government's existing debt is renegotiated to achieve conservation purposes. In a typical case, economic or political circumstances arise that make it difficult for a debtor government to repay some or all of its debt under the original terms and conditions. Creditors, who may be foreign governments or banks, and who are faced with the possible default on the debt, have an incentive to renegotiate its terms. Debt-for-nature arrangements often are facilitated by a nongovernmental environmental organization (NGO). As an example, an NGO buys the debt from the creditor at a discount. The debtor government agrees to pay the NGO an amount somewhere between the original face value of the loan and the discount paid by the NGO. The debt is retired, and the NGO can use the amount it received in excess of its costs to fund conservation programs and activities. (The potential for a debt-for-nature swap relating to SCR is unknown at this point, but we expect that it is small.)

VIII. Southgate Financial Planning Analysis

We have developed a spreadsheet-based accounting framework to allow planners to develop a business strategy by estimating the net income from a range of activities at the Southgate Coastal Reserve. This framework is meant to be a tool that can be modified or expanded as the mix of activities changes over time. The parameter estimates in the worksheets are based on both real data and educated guesses. In some cases, we do not have precise estimates of revenues or costs, but we have constructed the worksheet so that such information can be readily added.

The spreadsheet is organized into individual worksheets covering the topics listed below. Receipts and costs are aggregated across activities and presented in a summary worksheet. The worksheets calculate revenues and costs on a semi-annual basis. These values are arranged into the three distinct phases of development of the Southgate Coastal Reserve. We have incorporated an annual inflation rate of two percent into the analysis.

The following description of activities serves also as a set of recommended courses of action to implement a coastal nature reserve at Southgate. These recommendations are linked to the broad recommendations made through the other COAST & HARBOR INSTITUTE reports.⁹

- ***Semi-Annual Net Income.*** This worksheet is linked to the other activity-based worksheets, and the latest version appears in Table 5. The worksheet data summarize the revenues and costs associated with each general activity. Costs are indicated by parentheses as negative contributions to income. Income and outlays are summed to obtain a semi-annual net income (or loss) figure at the bottom of the table. The last line in Table 5 is a cumulative semi-annual net income. According to the current parameterization, the reserve can expect to see a cumulative net income of about \$11,000 by the end of the three development phases. Annual income should be running at about \$155,000 after these development phases, and costs should be about \$116,000 per year. It should be noted that these estimates do not include initial and ongoing costs of landscaping, grounds maintenance, and security. Depending upon the scale of Security & Grounds activities, which is yet to be determined, the net income figures in Table 5 could be reduced significantly, mainly during the first two phases.
- ***Eco-Heritage Tours.*** An eco-heritage tour capability would be one of the core activities at SCR. The focus of such a tour would be on bird-watching, habitat, other flora and fauna, and the ecological significance of the reserve, particularly its linkages to other reserves in St. Croix and on other islands (for migrating birds). Tours may take place at any time during the year, but we expect that they might be more popular during the tourist season. The tour could include background on the history of the reserve, including tours of some of the historical structures on or near the property. The potential exists for linking the eco-heritage tour to a coastal boat tour (see the discussion on Science & Education below), furthering the link between SCR and EEMP. An experienced guide would be paid \$100 for leading each tour (Table 6). Individual tour fees would ramp up from \$25 to \$35 during the development phases, reflecting an improving nature reserve and a better viewing and educational experience. We hypothesize that tour costs may exceed revenues during the first two development phases, but a positive cash flow will begin to be generated during Phase III.
- ***Interpretive Center.*** It is likely that human appreciation of the natural quality of the Southgate property and of its ecological significance in the context of the growing network of coastal and marine reserves in the region could be enhanced greatly through the establishment of an Interpretive Center. An Interpretive Center would incorporate state-of-the-art computerization, videos, and natural history exhibits. A centerpiece of the center would be a domed theater with seating for between 50 to 100 persons. The theater would be designed with projectors and a sound system capable of presenting a multi-media presentation on coastal habitats and Caribbean marine and coastal ecology. The Center could be the gateway for human understanding and use of both SCR and EEMP. We have not yet fully budgeted for an Interpretive Center, because much thinking and discussion needs to take place concerning its specific design and offerings. We expect that the construction of an Interpretive Center would cost on the order of \$1 million, and funds to cover construction costs are most likely to be raised through a separate capital campaign.

⁹I thank Arthur Gaines and Elizabeth Gladfelter for their help in formulating these recommendations.

- **Gift Shop.** A gift shop associated with SCR may be a source of income and is likely to increase the visibility of the reserve. In Table 7, we present some of the worksheet data, focusing on a rented location of 150 square feet in the lobby of one of the two adjacent hotels. Because the hotel is likely to benefit from having the gift shop on its premises, we expect that the space might be obtained at a reduced rate. We estimate that the cost per square foot of shop space at the hotel is about a third of the cost of similar space in the airport (we assume that the latter is a competitive rate). We use median estimates of net sales and costs of goods sold in US natural history museums (MSA 2002) as approximations for those in an SCR gift shop. We expect the shop will employ one person and utilize the services of two volunteers. The shop would operate at one-half scale during the first two phases and at full scale during Phase III. Our current data suggest that the shop will incur small net losses even in the latter phases of reserve development. These losses might be offset with an active marketing program, internet sales, and reduced space rental.
- **Science & Education Programs.** SCR presents a wonderful opportunity to focus coastal and marine scientific and education programs (Table 8). Existing facilities at local hotels might be utilized for boat docking, lecturing, and performing simple laboratory analyses. Access to appropriate facilities would have to be worked out through an arrangement with the hotels. A science program could be organized to offer opportunities for visiting scientists and their students. These groups would bring their own specific laboratory equipment with them, obviating the need for storing and maintaining equipment at the reserve. The program most likely would run for a total of 12 weeks per year: four weeks in January and two weeks for each of the months from February through May. The number of students would be limited to 16 (the number that can fit into a van for transportation), and they would obtain room and board in a separate arrangement with the hotel. Students would pay a fee of \$100 a week to SEA. A small outboard barge-type pontoon boat would be purchased in Phase II. It could be used as a research vessel (at \$500 per week), as a tour boat for snorkelers and eco-heritage tourists (\$35 per tour), and for evening cruises (\$100 per person per cruise). There is a need for an administrator to handle the boat scheduling, make reservations for visiting students, among other tasks. We budget for a one-quarter time administrator. The administrator might be an existing SEA staff member.
- **Financial Contributions.** There is a vital need for monetary gifts and donations to support the development and continuing preservation efforts at the Southgate Coastal Reserve. In Table 9, we outline three main types of contributions. The first type is an endowment, which might be the product of a capital campaign. We suggest a \$200,000 endowment earning interest in a bank account. We conservatively use an interest rate of two percent, which would yield an income of \$4,000 per year. Second, we expect that there may be around five annual donations, averaging about \$500 per year and totaling \$2,500. We treat these donations as a source of income, but they could also be added to the endowment principal. Finally, we recommend the establishment of an Associates (Friends) organization. We expect at least 75 members, made up primarily of nearby property owners¹⁰, who pay a fee of \$100 a year. This activity would generate an additional \$7,500 annually, which could be used for operations or to build the endowment.

¹⁰ There are 340 property owners in the immediate area.

- ***Reserve Manager and Cottage.*** There is a need for initial landscaping, ongoing maintenance, grounds security, and a continuing presence at the reserve. We recommend a full time Reserve Manager, who lives onsite in a cottage, perhaps with his/her family. The cottage would be built with funds collected through a capital campaign. The Reserve Manager would live rent-free in the cottage in return for carrying out some of the needed services at the reserve. The Reserve Manager is responsible for paying utility bills, including water, electricity, and telephone. SCR would be responsible for annual maintenance and homeowner insurance. The Reserve Manager might earn extra pay by performing other services, such as leading the eco-heritage tours, cleaning and improving the grounds, and monitoring and enforcing the reserve rules. The annual net costs of this activity are estimated to be about \$4,000 by the end of Phase III (Table 10).
- ***Trail Construction and Maintenance.*** Access to SCR will require landscaping and trail building, including laying down boardwalks, building steps, and constructing bird blinds. (Landscaping and clean-up activities are covered under the Security & Grounds activity below.) We recommend incremental investments in trail infrastructure over the three development phases (Table 11). By the end of Phase III, we recommend 400 yards of boardwalk. We suggest the construction of four bird blinds by the end of Phase II as well. Our cost estimates are very rudimentary at this stage; however, we estimate total capital costs of about \$30,000, and maintenance costs will be on the order of \$1,000 per year. Trail construction and maintenance might involve the Reserve Manager and two TNC interns.
- ***Security & Grounds.*** There is a need for grounds maintenance and security at SCR. We suggest that these activities are best made a part of the responsibilities of the Reserve Manager, who will be maintaining a presence on site. We recommend that two TNC interns be involved in landscaping, predator control, and grounds maintenance, but they should not be involved in security monitoring and enforcement. These activities require specialized equipment, including mowers, clearing saws, chainsaws, hand tools, a chipper, a dumpster, an earthmover, bousehouses, security cameras and monitors, wiring, and fencing. Some or all of this equipment might be rented, or it could be purchased and kept at the cottage. Additional costs include tipping fees for the disposal of solid and organic wastes, predator control programs, and fuel costs. The exact nature of security and grounds activities will require further elaboration before we are able to derive good estimates of their costs (Table 12).

IX. Summary

The extent to which the Southgate property can be developed as a successful nature reserve hinges upon two important considerations: (1) a strategy for linking its purposes and activities to the growing network of nature reserves on St. Croix and, to a lesser extent, in the wider Caribbean, and (2) the implementation of a planning process for financial sustainability. Because of its proximity and ecological linkages, the purposes and activities at Southgate should be fully integrated with those that are under consideration for East End Marine Park. Too, EEMP may provide as yet unarticulated opportunities for funding at SCR. With regard to the second consideration, historical experience provides many examples of nature reserves that become merely paper parks as a consequence of inadequate financial planning. In this report, we begin the process by developing a planning framework, focusing on the development of the Southgate property in three phases.

We expect that almost one-third of the annual income for SCR will need to be derived from individual or corporate contributions. The establishment of a small endowment and the organization of a Friends group are both central to the development of this source of income. A Science & Education program could bring in another third of the annual income, mainly through fees for the use of a small boat for various purposes and from a minimal student fee. An eco-heritage tour program would provide about one-quarter of the annual income. Given our current estimates of income and outlays, the operation of a gift shop appears unlikely to generate a significant amount of income. Even so, a gift shop may be important to establish, because it has the potential to spread the word about the reserve, attracting interest and encouraging participation in other revenue generating activities.

Capital infrastructure will be required in the form of a Reserve Manager's cottage, a boat, trails, landscaping equipment, bird blinds, and, potentially, an Interpretive Center. Because of their scales, both the Interpretive Center and the cottage may require funding through capital campaigns. Both buildings are critical to the long-term success of SCR, in order to build human interest and participation and to ensure that incompatible activities do not compromise the primary purpose of a nature reserve. Other significant operating costs include those associated with facility operations, maintenance, landscaping, and administration.

As currently parameterized, our planning framework suggests that the potential exists for small positive cash flows from the operation of the reserve. It will be important to ensure that all sources of costs, including insurance, monitoring and enforcement, trailblazing, *et cetera*, are fully accounted for in the framework. In the event of net income, SEA may need to consider further enhancements of the Southgate property for nature conservation or investments in science and education programs in order to maintain its nonprofit status.

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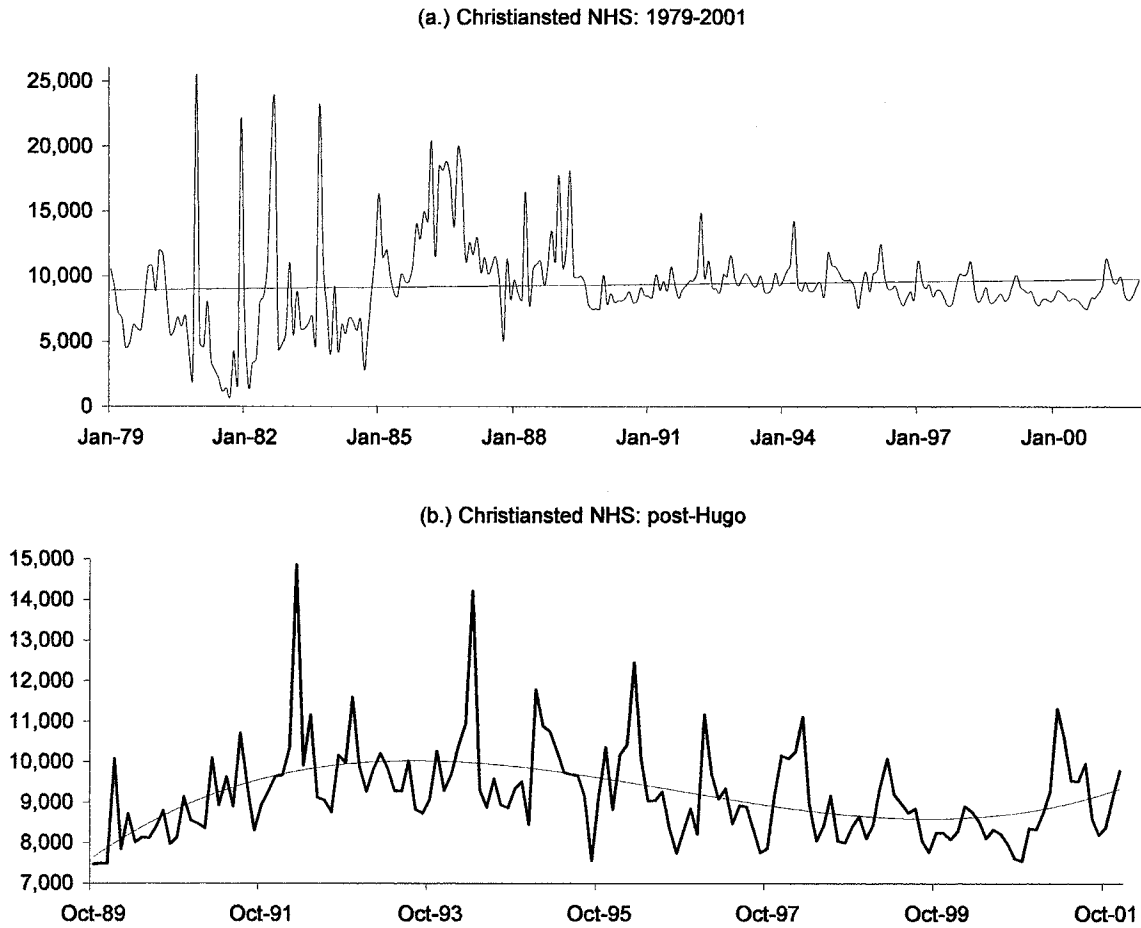


Figure 1: Monthly visitation to the Christiansted Fort, a National Historic Site on St. Croix, US Virgin Islands. (a.) January 1979 to December 2001: Note the reduced variability in monthly visitation after Hurricane Hugo hit the island in September 1989. (b.) October 1989 to December 2001: Visitation may exhibit cyclical behavior related to cycles in economic growth in North America. Most peak visitation occurs in late winter-early spring.

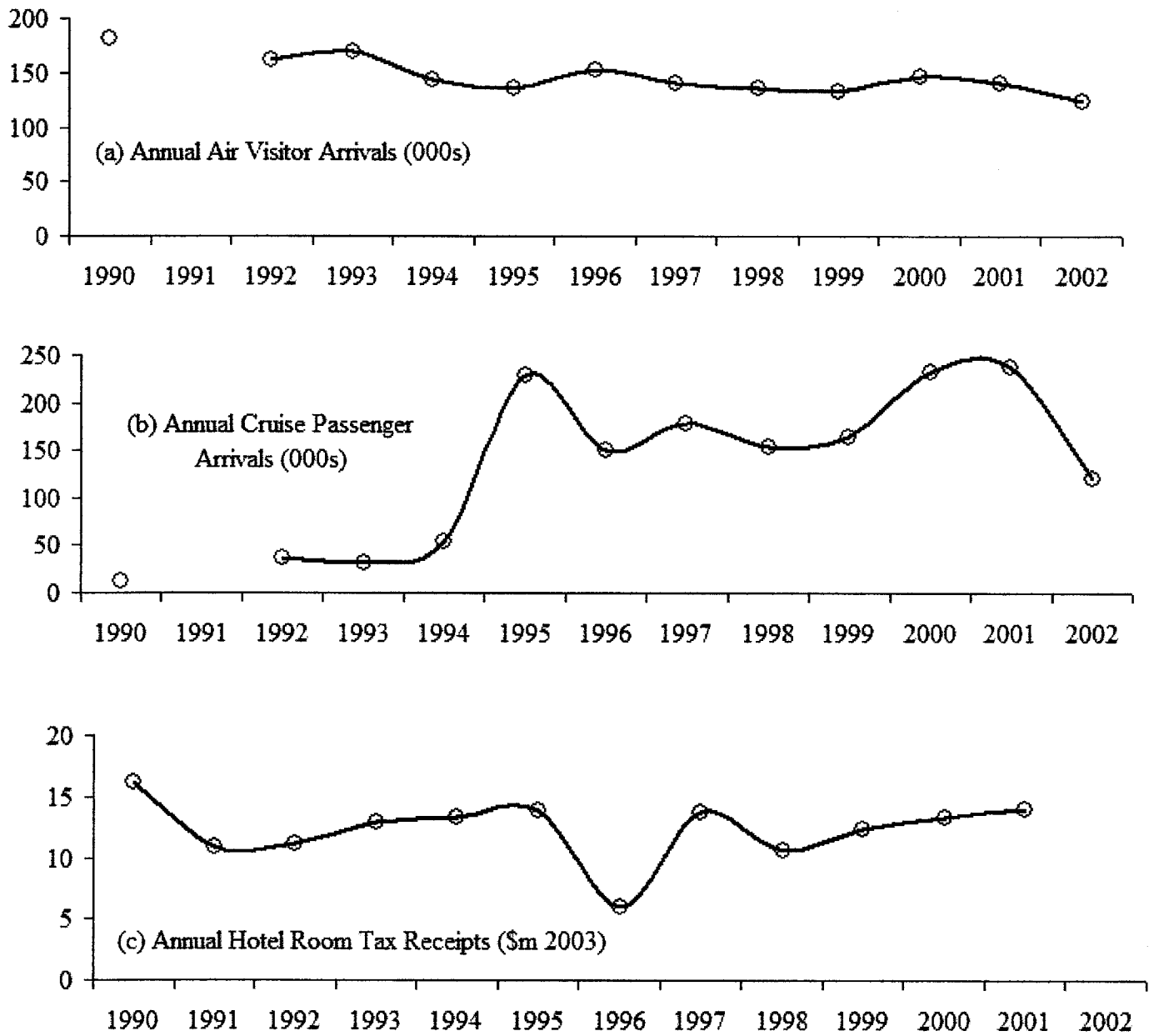


Figure 2: Air and cruise ship passenger arrivals (St. Croix only) and annual hotel room tax receipts (US Virgin Islands total) during 1990-2002.

Table 1: Annual Tourist Visits to Selected Destinations on St. Croix: 1993-1996

	1993	1994	1995	1996
Whim Plantation (T&B)	13,788	14,969	34,738	45,283
St. George Botanical Garden (T&B)	12,750	13,300	17,295	14,559
Cruzan Rum (T&B)	12,000	16,000	30,000	34,676
Christiansted Fort (T&B)	15,056	13,340	12,790	10,285
TOTALS (T&B)	53,594	57,609	94,823	104,803
Christiansted Fort (NPS)	113,883	118,067	117,766	111,891
Christiansted Fort (NPS/T&B)	8	9	9	11

Sources: Tyson and Bacci (T&B 1996) and US National Park Service (NPS) unpublished data.

Table 2: Southgate Coastal Reserve Activities

		Inshore waters	Beach Rock	Barrier Beach	Pond	SEA upland	Watershed	Comments
Market	Fishing	X		X				Conch, some reef fish
	Turtling			X				Illegal poaching
Non-market Non-consumptive	Beach visits	X		X		X		Sunbathing, walking, swimming, snorkeling, surfcasting, picnics, parties, kites
	Boat storage			X				Unauthorized (?) storage
	Camping			X				
	Pet exercise			X	X			Primarily dogs
	Horseback riding				X			Workout site for dressage on dry pond bottom
	Bird watching	X		X	X	X	X	
	Education	X	X	X	X	X	X	CMPA service or school field trips?
Scientific research	X	X	X	X	X			
Non-market Consumptive	Kayaking	X						Unauthorized landing on Green Cay
	Sailing	X						
	Brine disposal					X		Desalination plant on adjacent land discharging brine effluent
	Cellar dirt disposal					X		Construction dirt [includes earth fill?]
	Driving			X	X			ORV thrill antics on dry pond bottom
Passive Non-consumptive	Hazardous waste disposal				X	X		Waste automobile oil
	Solid waste disposal			X	X	X		Litter; household trash, derelict cars, appliances, oil filters
	Ecosystem/park	X	X	X	X	X	X	Non-use values (option, bequest, existence) are likely to be small at present; these values could develop with more attention to habitat conservation
Unusual/Infrequent	Dead animal disposal					X		Dog carcass found in area
	Helicopter landing				X			Reported incident on dry pond bottom

Table 3: Southgate Coastal Reserve: Activity Income Potential

	Quota	Price	Potential Income	SCR Services	Private Negotiation	Comment	
Market	Fishing	TAC	landings tax	N	--	Caribbean FMC develops rules (command-and-control)	
	Turtling	ban	fine	N	--	Territorial government's enforcement responsibility	
	Beach visits	--	user fee	N	--	Unrestricted beach access is an historic public right	
	Boat storage	spaces	rental	Y	--	Probably limited potential	
	Camping	campsites	user fee	Y	--	Pay at Interpretive Center; campsite development, maintenance	
	Pet exercise	--	user fee	N	--	Prohibit as incompatible with nature reserve	
	Horseback riding	--	user fee	N	--	Prohibit as incompatible with nature reserve	
	Bird watching	tour limit	user fee	Y	--	Pay/arrange at Museum Store or Interpretive Center	
	Education	tour limit	user fee	Y	--	Minor student fee for enrollment in Science & Education activity	
	Scientific research	--	--	N	--	Fee for access to hotel and SCR facilities (boat rental)	
Non-market Non-consumptive	Kayaking	--	--	N	--	Offsite and difficult to control	
	Sailing	--	--	N	--	Offsite and difficult to control	
	Brine disposal	limit	effluent charge	Y	Y	Damage estimate (?); territorial government function?	
	Cellar dirt disposal	limit	tippling fee	Y	Y	Damage estimate (?); territorial government function?	
	Gray water disposal	limit	effluent charge	Y	Y	Possible trade with hotels for other services	
	Driving	ban	fine	N	--	Prohibit as incompatible with nature reserve	
	Hazardous waste disposal	ban	fine	N	--	Damage estimates (?); Territorial enforcement	
	Solid waste disposal	ban	fine	N	--	Damage estimates (?); Territorial enforcement	
	Non-market Consumptive						

Table 4: Selected Museum Store Characteristics (Median Values)
 [for stores with Gross Sales less than \$35,000]

Museum Type	Stores in Sample	Store Size (sq ft)	Attendance	Net Sales	Cost of Goods Sold	Gross Margin	Average Inventory (at cost)	Employees (full time)	Employees (part time)	Volunteers
Natural History	5	361	8,000	\$21,005	\$10,000	\$11,005	\$8,080	1	3	18
Science	7	790	25,000	\$20,589	\$13,000	\$7,589	\$13,649	2	6	2
All Types	131	360	13,000	\$19,413	\$10,000	\$9,413	\$10,000	3	4	10

Table 5: Phases I to III: Semi-Annual Net Income

Activities	Months:	Phase I			Phase II			Phase III	
		0-6	7-12	13-18	19-24	25-30	31-36	37-42	
Eco-heritage Tour Revenues		\$4,500	\$4,455	\$4,410	\$10,476	\$10,368	\$19,950	\$19,740	
Interpretive Center Receipts		--	--	--	--	--	--	--	
Museum Store Sales		\$5,147	\$5,096	\$5,044	\$4,993	\$4,941	\$9,780	\$9,677	
Education Program Receipts		\$7,200	\$7,128	\$7,056	\$24,202	\$23,952	\$23,703	\$23,453	
Gray Water Disposal Charges		--	--	--	--	--	--	--	
Endowment Interest		\$2,000	\$1,980	\$1,960	\$3,880	\$3,840	\$5,700	\$5,640	
Donations		\$1,000	\$990	\$980	\$2,425	\$2,400	\$4,750	\$4,700	
Associates Dues		\$5,000	\$4,950	\$4,900	\$7,275	\$7,200	\$14,250	\$14,100	
Income Subtotal		<u>\$24,847</u>	<u>\$24,599</u>	<u>\$24,350</u>	<u>\$53,250</u>	<u>\$52,701</u>	<u>\$78,132</u>	<u>\$77,310</u>	
Eco-heritage Tour Costs		(\$9,000)	(\$9,090)	(\$9,180)	(\$12,360)	(\$12,480)	(\$15,750)	(\$15,900)	
Museum Store Costs		(\$5,488)	(\$5,543)	(\$5,598)	(\$5,653)	(\$5,708)	(\$11,525)	(\$11,635)	
Science & Education Costs		(\$9,305)	(\$7,378)	(\$7,451)	(\$40,278)	(\$14,669)	(\$14,810)	(\$14,951)	
Cottage Maintenance		(\$1,900)	(\$1,919)	(\$1,938)	(\$1,957)	(\$1,976)	(\$1,995)	(\$2,014)	
Security & Grounds		(\$4,600)	(\$1,515)	(\$1,530)	(\$10,506)	(\$5,200)	(\$5,250)	(\$5,300)	
Trails		(\$7,650)	(\$152)	(\$153)	(\$7,983)	(\$260)	(\$16,275)	(\$530)	
Outlay Subtotal		<u>(\$37,943)</u>	<u>(\$25,597)</u>	<u>(\$25,850)</u>	<u>(\$78,737)</u>	<u>(\$40,293)</u>	<u>(\$65,606)</u>	<u>(\$50,330)</u>	
Semi-Annual Net Income		<u>(\$13,096)</u>	<u>(\$998)</u>	<u>(\$1,500)</u>	<u>(\$25,486)</u>	<u>\$12,408</u>	<u>\$12,527</u>	<u>\$26,979</u>	
Cumulative Semi-Annual Net Income		<u>(\$13,096)</u>	<u>(\$14,094)</u>	<u>(\$15,594)</u>	<u>(\$41,080)</u>	<u>(\$28,672)</u>	<u>(\$16,145)</u>	<u>\$10,835</u>	

Table 6: Hypothetical Eco-Heritage Tour Data

	Phase I	Phase II	Phase III
Tours/wk	3	4	5
Weeks/yr	30	30	30
Birdwatchers/tour (average)	2	3	4
Total Visitation/yr	180	360	600
Tourist Fee	\$25	\$30	\$35
Revenues/yr	\$4,500	\$10,800	\$21,000
Tourguides/tour	1	1	1
Tourguide Wage/tour	\$100	\$100	\$100
Total Costs	(\$9,000)	(\$12,000)	(\$15,000)

Table 7: Hypothetical Gift Shop Data

Venue	Hotel Shop
Rent/sqft/yr	\$5
Square feet	150
Net Sales/yr	\$20,589
Cost of Goods Sold/yr	\$13,000
Total Rent/yr	\$750
Employees	1
Volunteers	2
Wage/hr	\$7.93
Labor Hours/yr	1,000
Labor Cost/yr	\$7,930
Average Inventory/yr	\$13,649
Inventory Cost/yr {@2% interest}	\$273
Insurance	--

Table 8: Hypothetical Science & Education Programs Data

	<u>median</u>		<u>median</u>
COSTS		REVENUES	
Small boat	\$25,000	Price/coastal boat tour	\$35
Classroom space	--	Trips/yr	100
Laboratory space	--	Tourists/trip	5
Equipment	\$2,000	Tourboat Revenues	\$17,500
Total Capital Costs	\$27,000		
		Price/dinner cruise	\$100
Boat maintenance	\$1,600	Trips/yr	20
Boat insurance	--	Tourists/trip	6
Boat tour operator fee/tour	\$100	Dinner Cruise Revenues	\$12,000
Boat tour operator costs	\$12,000		
Dock rental	--	Students/wk	12
Laboratory Supplies	--	Student Fees/wk	\$100
Office supplies/copying	\$2,500	Wks/year	12
Botanist lecturer	--	Student Fee Receipts	\$14,400
Zoologist lecturer	--	Boat rental (as RV)/wk	\$500
Adminstrator wage	\$24.22	Research Vessel Revenues	\$6,000
Adminstrator hours	500		
Adminstrator costs	\$12,110	Total Revenues	\$49,900
Total Operating Costs	\$16,210		

Table 9: Hypothetical Contributions Data

	<u>minimum</u>	<u>moderate</u>	<u>maximum</u>
Endowment			
Capital	\$100,000	\$200,000	\$300,000
Interest	2%	2%	2%
Annual Income	\$2,000	\$4,000	\$6,000
Donations			
Donors	2	5	10
Donation size (average)	\$500	\$500	\$500
Annual Income	\$1,000	\$2,500	\$5,000
Associates			
Members	50	75	150
Dues	\$100	\$100	\$100
Annual income	\$5,000	\$7,500	\$15,000

Table 10: Hypothetical Reserve Manager and Cottage Data

Reserve Manager	<u>mean</u>
Weeks/yr	52
Minimum wage/hr	\$7.31
Labor cost/yr	\$15,204
Cottage Operating Costs	
Maintenance/month	\$150
Insurance/month	\$167
Property tax	\$0
Maintenance cost/yr	\$3,800

Table 11: Hypothetical Trail Data

	Phase I	Phase II	Phase III
Capital Costs			
Initial landscape grading			
Boardwalk (yds)	100	100	200
Boardwalk cost/yd	\$50	\$50	\$50
Boardwalk total cost	\$5,000	\$5,000	\$10,000
Bird Blinds (#)	1	1	2
Blind unit cost	\$2,500	\$2,500	\$2,500
Blind total cost	\$2,500	\$2,500	\$5,000
Total Capital Costs	\$7,500	\$7,500	\$15,000
Operating Costs			
Semi-annual Maintenance	\$150	\$250	\$500
Post-storm landscape grading	--	--	--

Table 12: Hypothetical Security & Grounds Data

	Light	Moderate	Heavy
Mower	\$1,500	\$1,500	\$3,000
Clearing saw	\$700	\$800	\$900
Chainsaw	\$400	\$500	\$600
Hand tools	\$500	\$600	\$700
Chipper			
Dumpster			
Earthmover rental			
Bousehouses			
Security cameras & TV monitor			
Wiring			
Fencing			
Total capital costs	\$3,100	\$3,400	\$5,200
Semi-Annual Estimates			
Solid waste cleanup	\$1,000	\$1,500	\$2,500
Mowing and burning	\$500	\$1,500	\$2,500
Little Tern predator control			
Turtle protection			
Botany program			
Landfill tipping Fee			
Septic disposal			
Fuel costs			
Total operating costs	\$1,500	\$3,000	\$5,000

--NOTE--

Southgate Coastal Reserve Financial Planning Analysis

Financial planning software prepared in association with this study could not be included with this pdf file. This software (FA frpt 1 11 04.xls) is available by e-mail from the St. Croix Environmental Association (cburke@seastx.org) or from the Woods Hole Oceanographic Institution (againes@whoi.edu or phoagland@whoi.edu).