

Anegada Sea Turtle Recovery A Community Assessment

a report by

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Problem Statement: A major issue in the design of effective sea turtle preservation and restoration activities on the island of Anegada is the requirement for the support of the local community.

Background: Anegada is in the midst of a tourism and development boom, unprecedented in its history. Local residents, and the off-island descendants of residents, seem opposed to sea turtle and iguana conservation programs because they fear such programs will infringe on their property rights and the ability to profit from the current boom. This opposition does not extend to all Anegada-based conservation projects, as a flamingo breeding and recovery project seems to have good general acceptance in the local community (and has been accompanied by significant international publicity).

Community Assessment Project: This community assessment project was envisioned by the Island Resources Foundation and supported by the Panaphil Foundation of Philadelphia, Pennsylvania.

Community Assessment Overview: As summarized by the Foundation in April 1997, there are several tasks for this community assessment, complicated by the need to determine the attitudes and impact of non-resident Anegadians. Among the assessment tasks are:

- Identification of the actual users of turtles and turtle eggs—specifically, what are the characteristics of the harvesters and what/where are the markets for turtles and eggs;
- Characterization of community attitudes to turtle and egg harvesting;
- Summarization of perceptions of incentives and disincentives to stopping the turtle harvest;
- Analysis of interactive issues involving turtles and other endangered species on Anegada, especially the endemic local iguana;
- Analysis of the apparent role of local distrust of the central (*i.e.*, Tortola) government;
- Recommendations to address local skepticism about visiting researchers; and,

- Description of community perceptions about appropriate control mechanisms.

Community Assessment Product: The Summary Community Assessment Report that follows the previously specified Terms of Reference outline, and is based on a total of 12 person-days of effort, encompassing field research and report writing.

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Anegada Sea Turtle Recovery Project Community Assessment Summary Report

1.0 PROJECT BACKGROUND

Concern over the health of sea turtle stocks in the Caribbean, and the British Virgin Islands in particular, is widespread. Reasons for this concern are well documented. A particularly comprehensive discussion of the state of the locally occurring species of sea turtles may be found in the Sea Turtle Recovery Action Plan for the British Virgin Islands (*Eckert et al. 1993*).

As noted in the Preface, this assessment is limited in scope and covers a number of very complex topics. This community assessment is a brief summary of local attitudes to provide some initial input for a proposed follow-on turtle conservation and recovery project.

To inform the community assessment, a total of twenty-four (24) Anegada residents were interviewed (see Appendix A, below), using open ended interview protocols covering the broad topics in this report. Interviews were qualitative in nature, and persons were selected for interview based on network or "snowball" sampling, where individuals known to be knowledgeable on particular relevant subjects were asked for recommendations of others to be included in the study. Additionally, senior personnel at the Conservation and Fisheries Department, the National Parks Trust, Town and Country Planning, and the Development Planning Unit of the BVI government were contacted, along with personnel at H. Lavity Stoutt Community College known by Island Resources Foundation whose research touched upon relevant subject areas. Literature review was undertaken through the Island Resources Foundation collection.

2.0 AFFECTED POPULATION AND RESOURCE USE

The British Virgin Islands (BVI) are comprised of approximately 60 islands. Anegada is the northernmost of these islands, located at 18 degrees, 4 minutes north latitude and 64 degrees, 20 minutes west longitude. It is twenty-five miles from Tortola and, at 9,600 acres, it is the second largest island in the BVI (BVI 1993). The island is capped by a flat limestone formation, in distinct contrast to the volcanic and mountainous landscapes of the rest of the BVI and the Virgin group as a whole (*LaBastille and Richmond 1973*). This section is intended to provide background necessary for the discussion of turtle-specific issues in Anegada.

2.1 DESCRIPTION OF ANEGADA SOCIO-ECONOMIC CONTEXT

2.1.1 Summary Demographic Information

According to BVI planning documents (BVI 1993), Anegada has experienced a general population loss from around 1911 to present, with Tortola, St. Thomas, and North America as the primary destinations for emigrants. However, within this overall span, the population was virtually the same during the census years 1946, 1960, and 1970. Within the past generation, an especially large loss occurred during the 1970s, when close to 40% of the population left the island. This sharp dip was attributed to attempts at implementation of the Anegada Development Corporation proposals (discussed later in this report), which in turn led to a major land controversy. The following table presents population figures for this entire period.¹

¹ The figures in the above table for total population for 1991 are at odds with the 1993 Anegada Development Plan which shows a total Anegada population of 156 (all other census years are in agreement). This alternate figure would result in a population decline of 5% for the 1980 to 1991 period rather than the 1.2% shown. The figure from the development plan was not used as it is not consistent with other figures in that or other documents.

Table 1: Anegada and Total BVI Population, 1911–1991

	Census Year						
	1911	1921	1946	1960	1970	1980	1991
Population							
Anegada	457	358	274	274	271	164	162
All BVI	5562	5082	6505	7291	9672	10985	16717
Percent Growth							
Anegada	---	-22.0%	-23.0%	0.0%	-1.2%	-39.0%	-1.2%
BVI	---	-8.6%	22.0%	12.0%	33.0%	13.0%	52.0%

Sources: adapted from BVI 1993, p 6; DPU 1994a, p 7; BVI n.d., p 25

According to interview data, the population has been relatively stable at around 150 persons for a number of years. Interviews did suggest, however, that Anegada is steadily losing young people as they seek more attractive educational opportunities and employment markets elsewhere. One interviewee also noted that for young people, "everyone here is related. They need to meet people ... out-migration is a matter of social life."

Although overall the population of Anegada declined by two from 1980 to 1991, the number of households in Anegada increased from 47 to 59 during this same period. During this time mean household size decreased from 3.1 to 2.75 (1991 *Population and Housing Census, Volume II, p 55*). A considerable proportion of the homes on Anegada are of older construction, as illustrated in the following table.

Table 2: Number of Dwelling Units by Year of Construction, Anegada, 1991

	Before 1960	1960-1969	1970-1979	1980 or Later	Total
Anegada	23	16	8	12	59

Sources: adapted from BVI 1996, p 36

Given the overall decline in population over the years, there are also a number of unoccupied dwellings, particularly in the Settlement area that are in various states of repair or disrepair.

The following table presents a break-out of the population of Anegada by age and sex. Of particular note for several strands of discussion in this report is the small number of persons of an age to be potentially in the active labor force of Anegada.

Table 3: 1991 Anegada Population by Age and Sex

Age Group	0-9 years	10-19 years	20-54 years	55 plus years	Total
Number of Persons	27	21	71	42	161
% of Total	17%	13%	44%	27%	100%
Male	10	10	40	27	87
Female	17	11	31	16	75

Source: BVI 1993

2.1.2 Summary Economic Information

For the British Virgin Islands as a whole:

In the last twenty years BVI has experienced a substantial expansion of its economy based on tourism and more recently on International Financial Services. Tourism has become the major provider of employment and growth, and the registration of International Business Companies has become the major source of income. (BVI 1996:14)

Anegada itself has benefited directly from expanding tourism, but according to interview data, the underpinning of the local economy remains fishing, supplemented by tourism and government-related employment. Government-related employment includes health workers, teachers, public safety officers, customs/immigration officials, post office staff, and full-time and casual public works jobs; additionally, the electric corporation is a government-subsidized undertaking that provides employment.

During interviews, older individuals noted that there used to be a seasonal migration pattern for Anegada residents, particularly men, as they would leave for a portion of each year for employment off-island. For example, up until the early years of World War II, it was reportedly common for Anegada men to spend time in the Dominican Republic during sugar cane harvest time. Some individuals reported Anegada residents participated in this economic activity primarily as skilled laborers (e.g., carpenters) rather than as field hands. In this type of pattern, the overall population of the Anegada was maintained, more or less, as individuals returned to the island following the harvest season. Today, according to interview data, there is no longer a seasonal employment migration pattern. People still do leave the island for employment, but are likely to settle in other places, with the United States Virgin Islands (USVI) and the United States (US) mainland cited as the most common areas. It is important to note, however, that this need not necessarily result in permanent emigration. As discussed below, returnees to Anegada comprise an important segment in the local economy.

Another economic trend of change over the past several decades frequently cited in interviews is the demise of agriculture. Once an important component of Anegada's economy, agriculture has reportedly not been practiced on a scale larger than home gardens since the 1960s. According to interview data, the primary reason agriculture is no longer practiced is the destruction of the walls used for segmenting crop production and animal grazing areas during an abortive island-wide development plan (discussed below). A secondary reason given during interviews is that the climate has become much drier than in the past. While historical records are sparse, today the island receives between 35-40 inches of annual rainfall, and this dry climate is attributed mainly to the absence of topographic relief. The island is capped by a limestone formation, making it geologically different from the rest of the BVI. The highest point on the island is approximately 26 feet above sea level (in the northeast) and it is estimated that over 40% of the island has an elevation of less than 10' above sea level. The below-sea-level depressions that dominate the western end of the island form an extensive system of saline ponds (BVI 1993). This topography has constrained agricultural land use (and settlement) patterns on the island in a rather straightforward way.

The following table presents a sense of scale of the economy of Anegada (as seen through employment-related data) in 1992 compared to the two most populous islands of the BVI. For example, these data show that the average earnings-per-job and average earnings-per-week on Anegada are only *half* that of their counterparts on Virgin Gorda. Anegada has the lowest average earnings per week of the reporting islands of the BVI (DPU 1994a:85). None of the employees on Anegada earned over \$18,600 per year, and only a total of four employees earned more than \$9,000 per year (DPU 1994a:43). As with all such figures of this type, care should be taken in interpretation. These are presented here primarily for comparative purposes. Actual incomes, particularly from activities such as fishing (known to be a major income source for Anegadians) and entrepreneurial undertakings, are likely to be significantly under-reported.

Table 4: Number of Jobs, Earnings, and Weeks Worked by Location of Business: 1992

Location:	Anegada	Tortola	Virgin Gorda
Jobs	40	9,741	1,427
Earnings	US\$148,641	US\$90,211,453	US\$11,526,649
Weeks Worked	1,255	353,281	56,252
Avg Earn/Job	US\$3,716	US\$9,261	US\$8,077
Avg Earn/Wk	US\$118	US\$255	US\$204

Source: adapted from DPU 1994a, pg. 85.

The small scale and limited opportunities in Anegada's economy have implications for both population movement and perceived alternatives to existing economic activities (including turtle harvest). Anegada is isolated from the rest of the BVI, with its nearest neighbor, Virgin Gorda, being some 19 km distant. This isolation and limited existing development, on the other hand, have made Anegada the focus of several large-scale development proposals in the past. These are briefly discussed in Section 2.5 below.

Anegadians are acutely aware of the matter of "scale" in relation to any new proposed development, in addition to the social, cultural, and demographic changes that may accompany various types of development. Given that Anegada has a small population (and an even smaller labor force), new development even at a very limited scale could result in an influx of outsiders to fill labor needs. This has been experienced elsewhere in the BVI, for as a whole, "of particular note is the fact that in 1991 approximately 60% of the labor force was estimated to be expatriate" (*BVI 1996:19*). In Anegada, what would be a relatively modest development elsewhere could easily result in an even higher proportion of labor force imbalance. One government official noted that there was recently a project proponent who wanted to build a 400-room hotel on Anegada. He stated that a good rule of thumb would be to estimate one employee per room, and each of these positions could mean two or three persons (employees' family members) coming to the island. This would result in an additional 800 to 1,200 people on an island with a resident population of approximately 150 persons, which would clearly have profound impacts on Anegada.

Given the lack of local employment opportunities, Anegadians commonly move to other locations for employment. Some of these individuals later return to Anegada and, as discussed below, these "returnees" have come to play an important role particularly in the private sector of Anegada's economy.

For the BVI as a whole, "[t]he fisheries industry in the BVI is based on a small scale artisanal fishery and like agriculture contributes a relatively small percentage to the GDP, 2.16% in 1987 ... The BVI imports a considerable quantity of fish" (*DPU et al. 1994:66*). According to interview data, however, fishing is perhaps the key economic sector for Anegada itself. In the words of one senior government official, "if there is anything close to [a fishing] industry in the BVI, it is Anegada fishing." This activity is discussed under natural resource utilization in Section 2.4.

According to interview data, the only "export" businesses on Anegada at present are two ceramics/pottery businesses, and a food business that sells jams, jellies, chutney and the like. A new enterprise added in 1997 to the "export" category was a soap and bath products manufacturing business that featured a wide range of products and included some joint venture work with one of the pottery

businesses. Each of these businesses derives a share of its market from local tourist purchases in addition to the sale of products on other islands and via mail order.

It is also important to note that for Anegada the expansion of tourism has, not surprisingly, focused on its beaches and the coastal marine environment. This, in turn, has direct and indirect implications for community attitudes toward beach-based prospective turtle conservation measures.

2.1.3 Geographic Distribution of Population

Anegada is the least densely populated of the major British Virgin Islands. With a land area of 38.6 square kilometers, and a 1991 population of 162 persons, the population density is four persons per square kilometer. This compares with 223 persons per sq. km in Tortola. Virgin Gorda, with 21.2 sq. km of area, has a density of 114 persons per sq. km (*DPU 1994b: 9*) Population density has remained fairly stable in absolute (if not relative) terms over the past several decades because even though the population has decreased somewhat, it is relatively small in comparison to the area of the island. For example, in 1960, with a population of 374 and an area of 9,567 acres, Anegada's population density was 0.03 persons/acre; in 1991 with 156 persons the density was 0.02 persons per acre (*BVI 1996:11*).

At the time of the of the Renwick report (1987) there was only one family known to be living on the North Coast (at Bones Bight), and two families were reported to have occupied known areas on the West End. All of the other residents were described as living in the Settlement, at Nutmeg Point, or Setting Point.

At the time of a 1993 Land Use Survey of the BVI, Town & Country Planning Department (in *BVI 1993:15*), built development on the island was restricted to the following areas:

- Loblolly Bay
- Scattered development along the west of The Settlement
- The area known as the American Village west of Nutmeg Point
- Setting Point
- Pomato Point
- North of the Pond
- The Airport and adjacent areas
- The Walls

- The area known as The Settlement which is located on the south coast of the island.

As of the summer of 1997, in the area of Jack Bay and Loblolly Bay there were two beach bar/restaurants within the dunes, along with a campground and snack bar. On the north side of the island was a beach bar/restaurant at Cow Wreck beach, along with a private residence farther to the east. To the west of the Settlement were two ceramics businesses and five houses near the twelve or so houses of "American Village" near Nutmeg Point. At Setting Point, there was a hotel complex (including a gift store, restaurant, bar, and dock) and a gas station along with two jetties. Less than a kilometer to the west of Setting Point road there is beach bar/restaurant, another restaurant/bar/campground/and 4-room lodging complex, a bakery, and an additional half dozen or so homes as one moves west along the road from this point. At Pomato Point there is a beach restaurant/bar with a museum, and just to the west of this two guest cottages have been recently completed and a third is under construction. An inventory of the Settlement itself was not done, but as of 1993 there were approximately 120 buildings, of which approximately 29 were vacant with the majority of these located toward the east end of Settlement. Commercial use within the Settlement is clustered along the east-west main road and includes small service shops, a bakery, and restaurant/bars. Immediately south of the Settlement is a public boat ramp and pier used by fishermen.

2.1.4 Off-Island Population Eligible to Receive Land

According to interview data, there are more Anegadians living outside of Anegada than on the island itself. This apparently has been the case for many years and is consistent with the large out-migration shown in population figures in Section 2.1.1, above. A Commission of Enquiry into the Anegada and Wickham's Cay Agreements, dated November 1969, stated

Many more Anegadians (natives and first generation) live outside the British Virgin Islands than on Anegada itself. We were told by witnesses from St. Thomas that about 300 live in the American Virgin Islands, and by a witness from New York that over 700 live there (Renwick 1987:3)

In interviews for the current project, residents also noted New York and the USVI are major population centers for Anegadians, with lesser numbers living in a variety of Eastern Seaboard states, as well as the Dominican Republic, Cuba, and Haiti. These locations have been primarily determined by historic labor migration patterns. That is, as Anegadians obtained jobs in USVI and US mainland markets, the families of those individuals moved there as well. For the relevance of these populations to land issues on Anegada itself, please see the discussion in Section 2.3.

2.1.5 *Discussion of Population Dynamics and the Role of Returnees on Anegada*

For the BVI as a whole, “the foreign-born population of the British Virgin Islands [as of 1991] comprise 49.9 percent of the total population.” (DPU 1994b:59). Aggregated statistics for Anegada itself were not readily accessible during the preparation of this summary report. Based on interview data and direct community contacts, it would appear that the figure would be significantly lower for Anegada, but that is not to say that the population of the island, though relatively stable in overall numbers has not been quite fluid over time. For example, one of the older Anegadian residents reported that he was the only individual [presumably meaning the only older adult] who had never spent more than one month away from Anegada during his lifetime. That is, it is common for individuals and families to have lived elsewhere for some greater or lesser portion of their lives, and if they were in family units at the time of their absence from the island, to have had children who were foreign born. Additionally, given the small size of the population in absolute terms, a number of spouses of Anegadians, who are now themselves Anegada residents, have come from different locales. Again, quantitative information was not readily available on this issue.

On the other hand, it was apparent from interview data that returnees, that is, individuals who have lived off Anegada for significant periods of time to later return to the island, have both served to help stabilize the population and also provided trained manpower in growth sectors of the local economy, most notably in the area of tourism-affiliated businesses. For example, one of the new types of business on the island is the beach bar/restaurant that caters to tourists interested in swimming, snorkeling, and enjoying the beach. Though the sample size is small (*i.e.*, there are few such business in absolute terms), a disproportionate number of them are owned by persons who are returnees to the island. There are a number of reasons for this, undoubtedly, but one of the key reasons clearly has to do with access to capital accumulated in more vibrant economies off-island. Given the state of land ownership on the island, where title to land cannot be used as collateral for business loans, persons with access to privately held capital have a distinct advantage in being able to successfully begin such businesses. It is also true that individuals who are returnees (or not originally from Anegada altogether) play a disproportionately larger role in the ownership of other types of tourism-related businesses, such as lodging (hotel, guest houses, and campgrounds), gift stores, and restaurants, than one would expect simply based on proportional representation within the general population.

Some individuals during interviews expressed concern about the growth of the beach bar/restaurant sector of the tourist industry thereby impeding alternate

use of resources. One person in particular noted that people are not opposed to such business, but that beaches on Anegada are public, and there is concern that beaches adjacent to these businesses might come to be treated as private property to the exclusion or restriction of others.

To varying degrees over the years, the BVI government has been interested in seeing Anegadians return to Anegada as development takes place. According to senior officials interviewed, the type of development that is most desirable for Anegada is of a scale that will not overwhelm the local population; having Anegadians resident elsewhere be actively involved with development of small-scale businesses is one way to achieve this end.

2.2 EXISTING LAND USE

Land ownership and use are probably the most important affecting any potential turtle recovery project on Anegada. These topics are briefly discussed in this section.

2.2.1 Land Use Patterns

Land use on Anegada has profoundly changed over the past several generations. Up until the 1960s, agriculture played a large role in the economy and dominated land use. Agriculture was important in the early settlement of the island: "Even Anegada with its porous limestone and patches of cultivable ground, which by 1784 was just beginning to be settled,² was devoted to cotton." (Dookhan 1975:45). (Archaeological evidence points to Anegada as being used as a rendezvous point if not continuously occupied by aboriginal peoples, with the most immediately recognizable evidence of this use being the large piles of conch shells still visible at the east end of the island [Gross 1975]) An excellent description of the most recent (non-"garden") agricultural land use patterns may be found in Freeman (1975).

Anegada once was well cultivated by its residents according to older residents in the Settlement ... [two individuals] ... , 85 and 90 years old respectively, recall the cultivation of bananas, and many "plantations" or fields were planted to sweet corn, guinea corn, and different kinds of sweet potatoes. Both goats and cattle, including milking cattle, were also raised ... Cattle were pastured in walled enclosures planted to guinea grass, while other fields also walled off were also planted to sorghum, sweet potatoes, and other crops. Both cattle and goats were trained over several generations not to climb over the low stone walls (4 feet approximately), although it was physically possible for them to do so ... Outside

² Dookhan (1975:67n13) notes that only 3 families were living on Anegada at the time.

of the walled fields were the community grazing commons, used by both cattle and goats. Then as now, the goats return to pens in the Settlement every night, thereby limiting their range to the portions of the island east of the brackish pond complex. Hard-to-handle cattle were eliminated by common agreement, in order to obtain docile, easy-to-train animals ... Major animal paths bordered by stone walls radiate from the Settlement, passing through the enclosed plantation and pasture areas to the open grazing commons beyond. It is clear that the stone walls lining the paths and enclosing the fields were essential to the coexistence of field crop agriculture and animal raising, and at the same time, their effectiveness depended upon the learned behavior of the goats and cattle ... (Freeman 1975:1-2)

The area covered by enclosures, or “walls” as they are called locally, spanned a large portion of the island, especially north and east of the Settlement. The walls, though now in various states of disrepair due to being severed by roads or partially obliterated by other development (such as the airport), are clearly visible from the air. Importantly, in terms of consideration of the possibility of some form of agriculture returning to Anegada, some of the areas enclosed by the walls are no longer suitable for agriculture.

It is noteworthy that some areas presently walled off are virtually bare rock, with the exception of solution cavities of various sizes that contain sandy organic soil ... The cavities comprise a cool moist growing medium for the plants in contrast to the superheated bare rock ... Formerly, these outcrop areas did have a shallow horizon of soil ... Sheet erosion, perhaps aided by wind erosion, has removed much of the topsoil from the limestone areas (the eastern two-thirds) and this process was no doubt accelerated by the destruction of vegetation for charcoal making, for cultivation, and by grazing and browsing. A reported diminishing of rainfall may also have aided the process. Finally, heavy rainfall with the occasional hurricane has probably been a major erosive force responsible for the disappearance of the topsoil over limestone bedrock areas. (Freeman 1975:2-3)

With the changes in the economic base away from agriculture, and the land use patterns associated with agriculture, land ownership (and therefore use) became vexing.

Although title was never clear, use patterns were established that had gone largely unchallenged. Land ownership difficulties elsewhere in the BVI were largely settled by 1864 through legislative means. However:

To a large extent these measures settled the problem of land transfer in the Virgin Islands other than Anegada, where different circumstances necessitated a different solution to the problem of land transfer and ownership ... Plots of land had been held by different families and had been handed down from generation to generation without disturbance, but the greater part of the island was regarded as

common property. (Dookhan 1975:135)

The land issue is far too complex to describe in detail in this summary report; it should be noted, however, that for the purposes of taxation, the question of ownership was raised in 1859, that same year the Colonial Land and Emigration Commissioners considered the issue, and it was decided that the Crown's rights to lands where title was in question should be waived in favor of those who claimed titles. Individuals in possession of land for 10 years, or lands with considerable capital investments were to be given title as well. Unoccupied land continued to be used in common, with the proviso that the "President" of the colony could withdraw any portion of it required for sale. It was not until 1885 that an Ordinance was passed disposing of the lands as decided upon in 1859, with the impetus to action on the Ordinance being attributed to a proposal by three Trinidadians to purchase 1,000 acres of Anegada in 1884 (Dookhan 1975:135-136). This would not be the last time proposed development would serve as a major impetus to resolve land issues, as discussed below. For unknown reasons, no one seems to have obtained title to lands under the 1885 Ordinance.

Table 5: Anegada General Land-Use Categories

	Built-up Area	Water Bodies Mangroves Beaches	Parks Protected Areas Recreation	Undeveloped	TOTAL
Acres	201	1,300	3	8,218	9,722
Parcels	87	---	1	149	237

Source: BVI 1996, page 23, based on a 1995 Town and Country Planning Department Land Use Survey

With increases in tourism in recent years, land use concerns regarding beaches have come to have a special focus on Anegada. All beaches in the BVI measure 49 miles in combined length. The 16.0 miles of beaches on Anegada are more than any of the other islands in the BVI. For comparison, Virgin Gorda *and* all of the North Sound islands³ have 11.5 miles of beaches, while Tortola has 6.2 miles of beaches (*Conservation and Fisheries Department, cited in DPU et al. 1994*).

With such extensive beaches, a small population and low population density, Anegada would seem to be a premier setting for turtle protection programs, both on the nesting beaches and in nearshore waters. For a number of reasons developed in this summary paper, this is not a straight-forward proposition.

³ Including Mosquito Island, Prickly Pear Island, Eustatia Rock, and Necker Island.

2.2.2 Land Ownership Patterns

As noted above, land ownership is not a simple issue on Anegada.

Anegada has had a long history of controversy with respect to land holding, beginning with the claim that ownership of the lands in Anegada were granted to persons on Anegada by Queen Victoria. An Anegada Lands Commission was established in 1987 to hold an inquiry into the ownership of the lands on Anegada and to advise the government of the BVI on the framework for an equitable distribution of the lands on Anegada. (BVI 1996:25)

The report of the Lands Commission is known as the “Renwick Report,” after John Douglas Barrymore Renwick, Q.C., the individual appointed by the Governor of the BVI, who functioned as a one-man commission. According to the Renwick Report, an 1885 Ordinance allowed for a process for titles to land to be obtained on Anegada, but apparently no residents or others utilized or received titles under these procedures. The next cornerstone piece of legislation on this topic was a 1961 Ordinance (*Anegada Ordinance Chapter 146 of the Revised Laws of the Virgin Islands*) that defines the Settlement area and permits other land to be reserved for cultivation and grazing, with the remainder (the “unallotted lands”) to be held in trust for Anegadians—and enables these lands to be leased, but not sold, by the Administrator in Council (*Renwick 1987:6-7*).

It was under the terms of the 1961 Ordinance that agreement was reached between Her Majesty the Queen and the Government of the British Virgin Islands, on the one hand, and the Development Corporation of Anegada Ltd., on the other hand. The terms of the lease also defined the status of the 1500 unleased acres of the island.

This year [1967] saw the initiation of a development scheme by the Englishman Kenneth Bates, and for the Anegadians, the disruptions related to that scheme spelled the end of the old pattern of agriculture. Bates was awarded a lease for 8,000 acres of Anegada’s 9,500 acres. The land use management pattern in which stone walls were so important a feature were destroyed by the construction of the airport and a number of roads. The airport was located in approximately the center of an intensively cultivated (plantation) area, and its orientation was such that it cut across a number of important cattle paths. Many fields were (breached) along the roads and the edge of the runway, and the airfield itself was cleared from areas formerly cultivated. Not only was land lost, but the exclusion of cattle and goats from fields was more difficult. Many men worked for Bates to the neglect of the fields and the walls. The animals learned to climb over the walls during this period of neglect and destruction and are no longer deterred by the low stone walls. (Freeman 1975:3-4)

The 1961 Ordinance was repealed by the Anegada (Repeal) Ordinance of 1973.

Other important legislation regarding lands on Anegada are the Land Adjudication Ordinance (1970) and the Registered Land Ordinance (1970). According to interview data, *none* of these actions has served as the basis for settling the issue of land ownership. The “Bates” development, as it is commonly called locally, forever changed land use patterns on Anegada and set in motion yet another round of land ownership difficulties.

Some Crown lands are leased, and some titles to land have been granted. On the other hand, it is clear from interview data that some development has taken place in the absence of clear title or lease, based on the assumption that if a certain minimal degree of consensus is reached locally, a person can develop property as he or she chooses without first obtaining title. According to one knowledgeable individual “things are out of hand at the moment—people are not following the Renwick recommendations.”

2.3 GOVERNMENT “LAND GRANT” PROGRAM FOR “REPATRIATES”

According to interview data, there is no formal program for granting lands for repatriates (or returnees) to Anegada—each case is considered separately. In fact, a number of well-placed individuals clearly held different understandings of the process. According to one government official, “the principle is that people could get lands based on what they traditionally used—whether they are away or on the island now.” One such program seems to be based on the (now repealed) 1961 Ordinance.

Under the 1961 Ordinance the area for the village was set aside and, if this area was once so marked, those persons who wish to have their home in that area, if they are qualified as Anegadians, could be given between one-half to one acre of land in the village on which to build their homes. One of the most vexed questions is who should be regarded as Anegadian and therefore entitled (as all Anegadians claim) to land in Anegada free-of-charge. There are those, notably persons who have spent their entire lives in Anegada, who claim that an Anegadian would be a British subject who has been born in Anegada of Anegadian parents. Yet others claim that notwithstanding nationality or place of birth once such a person would be considered to be an Anegadian for all purposes. It is my opinion that an Anegadian should be any one who if Anegada had a citizenship of its own would be a citizen of Anegada. (Renwick 1987:13-14, emphasis added.)

Other people in official positions noted that an offer by the [then] Chief Minister was made verbally to non-resident Anegadians, but that this has not been transformed into a formal written process. According to interviews, this Ministerial offer was one component of the process by which the central government has hoped to ensure that Anegadians (including non-resident Anegadians) take part in the development of Anegada.

Since the termination of the lease to the Development Corporation of Anegada, Ltd. and the offer by the then Minister Mr. Maduro of allocations of between 5 and 15 acres of land to any Anegadian, there have been a number of persons whose only contact with Anegada has been an occasional visit and claim that a distant relative of theirs was an Anegadian, who have applied to have the most valuable land in Anegada allocated to them. Further a few people have marked off areas with one strand of barbed-wire, apparently claiming thereby to have been in possession of these areas. I have no hesitation in recommending that these claims should be ignored.

(Renwick 1987:14)

Also according to interview data, there are still people staking claims to lands by fencing or otherwise marking off and using areas with an eye toward eventually obtaining title. Also, according to one particularly knowledgeable individual, if people are born to Anegada parents, they can make a proposal to the local Lands Committee, which then makes a recommendation to the government. He noted that

it may not be what the person who proposed it wants ... [you] have to have a sense of scale here so as not to upset the balance here. You can scale things up as the population grows ... it is with the consent of the general population [that the Lands Committee] does not give out big blocks of land.

2.4 LOCAL NATURAL RESOURCE UTILIZATION

The discussion in this section summarizes overall natural resource use patterns, and the place of turtles and their eggs in these use patterns. Further, the users of turtles and turtle eggs are identified by locale or other significant variables. The report also describes the inter-action of the patterns of natural resources uses with other local economic activities.

2.4.1 Summary of Natural Resource Use Patterns

Over the years, a number of naturalists have noted that while Anegada is not "pristine" in the sense of a landscape unaltered by human actions, it does offer an environment less altered than many other nearby places. For example, writing in the early 1970s, LaBastille and Richmond noted that:

Because of its heretofore light-agricultural and non-industrial nature, Anegada has been practically "uncontaminated" by chemical fertilizers, phosphates or chlorinated hydrocarbons. There have been no electrical appliances and scarcely any gas-driven engines in existence until the last 4 or 5 years. In addition, the island's location with reference to the prevailing easterly trade winds and ocean currents has protected Anegada from "contamination" and perhaps extensive introductions of flora and fauna from other land masses (1973:92).

According to interview data, the natural resources most heavily and regularly used by Anegada residents are marine resources. While terrestrial plants are cultivated and utilized by Anegadians for food, the only non-cultivated species mentioned as utilized by interviewees was sea grapes. Fish and other marine species account for the bulk of the exports of natural resource products to off-island markets.

Commercial fishing, may be small-scale in comparison to other areas, but it plays a large role in the Anegada economy. In the words of one interviewee, "fishing is number one here and tourism is number two. There is nothing else to do here, and you can't live off the tourists." Fishing on Anegada concentrates on two primary fisheries utilizing traps or pots: trap (finfish) fishing and lobster fishing. These will be discussed in some detail below. (Net fishing was also practiced in times past but, according to interview data, net fishing is now only used for personal use or subsistence fishing.) Unfortunately for the purposes of this analysis, according to an interview with a senior member of the Conservation and Fisheries Department, quantitative data on landings or other measures of fishing effort or success are not available for either current or recent years, although such a data collection system is under design.

In addition to trap fishing and lobstering, conch and whelk harvesting for commercial sale is also carried out on Anegada. Previously Anegada had a productive conch fishery, but it has declined in recent years because of overharvesting of the beds. As a result, fishermen report harvesting of juvenile conchs which will eventually deplete the future conch harvests (*BVI 1993:21*). While some local fishermen dispute the *cause* of conch decline, the fact of this decreased availability is universally noted.

Curemal (mullet) fishing was very popular on Anegada with the western saline ponds being the main source of these fish. This fishing is seasonal, however, "the catch is declining and this is one of the major concerns of the people of Anegada" (*BVI 1993:22*). Reportedly, this fishery is more of a personal or family-use fishery than the others mentioned, which are more commercial in nature. Reasons for the decline in curemal catch are speculative, but noted possibilities include overfishing and restriction of water flow into the ponds because of construction of a bridge over the passage from the pond to the sea and growth of mangrove in the passage (*BVI 1993:22*).

As for the primary commercial catch, as of 1977-1978, with less than 2% of the total population, Anegada was estimated to produce 18.7% of the total fish landings in the BVI (*Dalhousie Ocean Studies Programme 1985:42*). How this figure has changed in intervening years is unknown. However, according to interview data, fishing and markets for fish have changed dramatically over the past 20 years. The BVI is not self-sufficient in fish; it imports fish from nearby islands

and overseas. Anegada, conversely, *exports* fish to other locales. Until fairly recently, Anegada fishermen exported fish to St. Thomas and St. Croix (and even Puerto Rico), but this is no longer the case. Tortola is now the primary outlet for Anegada fish, and local fishermen typically make the run to Tortola after two set hauls, selling their catch direct to individual customers or middlemen rather than participating in selling their fish on other islands. The market for fish is differential by specie. Snappers and triggerfish are purchased by all of the local restaurants on Anegada (as they are species especially favored by tourists), whereas "pot fish" of various species are sold off-island.

Unlike the USVI where strings of traps are commonly run, fish (and lobster) traps around Anegada are still fished on a single line and one or two buoys. Anegada fishing vessels are typically skiffs in the 18-20' range and traps are hauled by hand on the smaller vessels. There are a few larger vessels in the mid-30 foot range, as well as a 46' vessel that is used for trap fishing as well as cargo hauling.

For lobsters, the market is different than for trap fish. With the growth of tourism on Anegada, lobster consumption on the island has increased dramatically. According to some persons interviewed, the local market can now utilize all of the lobsters that Anegada fishermen catch; a few individuals interviewed stated that at least a small portion of the lobster catch still goes off island.

While a number of fishermen stated that fishing was still good, there was nearly universal agreement that getting the same amount of fish now takes more traps (and longer runs) than in previous years, and the same is becoming true with lobsters. Unfortunately for analytic purposes, catch per unit effort (CPUE) statistics are unavailable. In the words of one fisherman, "there are more fishermen, there are more people in the BVI, there are more people to eat the fish, and there are more people to catch the fish." In recognition of declines in the fishery,

In 1990 the Anegada Horseshoe Reef was declared a protected area under the Fisheries Ordinance. This extensive reef system which extends 10 miles (16 km) south of Anegada has been declared a no-fishing and no-anchoring zone so as to protect fish stocks and coral reefs. (DPU et al. 1994:66)

Jarecki (1996:25) notes that "the specific meaning of 'protected' at Horseshoe Reef Fisheries Protected Area, however, is a bit uncertain as certain fishermen have been issued [approval] to fish within the protected zone."

In addition to the trap fishermen (and those who dive for conch), there is a single long-lining fishing operation on Anegada. This 40' vessel long-lines for trips that typically last from a week to 10 days, and targets swordfish and tuna. (All other Anegada fishing vessels return to the island on a daily basis.) It is believed to be

the only active long-lining vessel in the BVI at present. Reasons cited for others not becoming involved in this potentially lucrative fishery include the need for start-up capital, high operating expenses, and a slow return on investment. Additionally, there is reportedly one other Anegada fisherman who does some bottom fishing for red snapper and other high-value species, but this was not confirmed during interviews.

Another fishery issue commonly mentioned in interviews is that waters within the Exclusive Fishing Zone to the north of Anegada are often fished (illegally) by foreign vessels. Lack of resources for enforcement is considered the root of the problem, and foreign fishing is seen as a contributing factor to local fisheries decline. Also, part-time fishermen from Virgin Gorda reportedly fish the waters around Anegada, and local opinion is that these are primarily persons from elsewhere who have work permits and fish on weekends, having little respect for the Anegada resource base or its traditional fishery (to the extent that some Anegada fishermen accuse these Virgin Gorda-based fishermen of pulling Anegadian traps).

Natural resources are also exploited by tourists to Anegada. Non-consumptive uses include beach use, snorkeling, and wildlife viewing. Primary among consumptive uses, according to interview data, are fishing, spearfishing, and lobster diving.

2.4.1.1 *The Place of Turtles and Turtle Eggs in Overall Use Patterns*

Sea turtles have played an important role in the cultural and socio-economic development of the BVI. It does not appear that there ever was an established commercial export of sea turtles, but locally occurring species have been extensively exploited at the subsistence level. Although there has been a considerable decline in the fishery, it continues to the present day and remains family or community oriented (Eckert et al 1992:viii).

On Anegada, hawksbill (*Eretmochelys imbricata*) and green turtles (*Chelonia mydas*) are the species that are typically taken. Both species are taken for commercial sale and family or subsistence use.

A publication of the Dalhousie Ocean Studies Programme (1985:20) provides marine resource harvest maps for Anegada. Turtle harvest areas are shown along the beaches on the eastern edge of Pomato Point, on West End Point, in Bones Bight, in Loblolly Bay, at a minor prominence approximately one mile south of Table Bay, and on the beach due east of the major pond at the East End. Primary conch take areas are located on a swath from West End Point to Soldier Wash along the north side of the island moving from the beach seaward, and in an area south of the island roughly the shape and somewhat larger than the island itself offset to the south and east, with a tangent of the shape nearly touching the

island at White Bay. Pot fishing is shown as farther offshore and to the south and east of the southern conch area; primary lobster fishing areas are designated by a curved band that arcs north of the island from the west end all the way past the east end.

It is perhaps significant to note that the Anegada Development Plan (*BVI 1993*) which characterizes various types of fishing, among other economic activities on Anegada, does not mention turtles at all. As for current uses of turtles, it is obvious that consumption patterns have been changing in recent years. Among the points cited by interviewees were:

- a) turtle eggs are no longer used;
- b) since the implementation of fishing season prohibitions, fewer people harvest turtles than in the past;
- c) few people continue to use nets to catch turtles, rather, most of those that are taken are taken primarily by leaping on them from a boat; and,
- d) people no longer take turtles off the beaches.

The market for turtles taken by Anegada fishermen is Tortola and Virgin Gorda. (When asked why Virgin Gorda is a primary market for turtle but a secondary market for fish from Anegada, a common response was that “there are enough fishermen on Virgin Gorda.”) The restaurants that cater to tourists on Anegada do not serve turtle—there may be one local restaurant that does serve turtle in season, but this was unconfirmed.

As for the non-commercial take of turtles, interviews suggest that it is common for families to take one or two turtles per season for family consumption (though interviewees varied on the proportion of families who do so). Some interviewees stated that this use is declining, and attributed this to their observation that some young people do not like the taste of turtle. At any rate, subsistence take would appear to be at a relatively low level compared to historical reports (perhaps due to the availability of a far greater variety of foodstuffs). Further, the sharing of large turtles reported to be common several decades ago, and the festival-like atmosphere that accompanied such sharing, would appear to have completely disappeared. There is still a cultural component to turtle harvest, both as an enjoyed activity and as a traditional food source. On the other hand, the sharing/communal nature of the harvest has apparently faded into history.

Looking at the turtle take within the context of other marine harvest activities, there was near universal agreement that fishing overall is in a state of decline. While no statistical trend data are available, fishermen reported that it takes

more traps spread over a wider area than in past years to maintain historical levels of (finfish) catch (with Tortola now being the primary market). For lobsters, there is enough of a tourism-fueled market on Anegada to consume virtually all of the local catch. Conch, another significant component of the local harvest activity, have also declined in recent years, with the market for locally caught conch being both on Anegada and Tortola (but with interviews suggesting that increased tourism is increasing the portion of the conch harvest consumed on-island).

In other words, commercial turtle harvest remains a declining component in a declining fishery (at least as measured by “qualitative” CPUE if not absolute numbers). Turtle farming was considered at least once for its economic development potential for Anegada, with the plan including pumped water to ponds to serve as mariculture facilities. Problems with land ownership, a not-well-developed infrastructure, and a shortage of locally available turtle grass were cited as obstacles to such a project (*Mariculture, Ltd. n.d.: 6-89 - 6-92*).

2.4.1.2 Users of Turtles and Turtle Eggs

Interviewees were unanimous, with one exception, in stating the turtle eggs were no longer taken on Anegada. (The individual with a contrary opinion stated that “some people here do walk the beaches and destroy the nests [poach the eggs] ... today that has died down ... for the most part taking turtle eggs has stopped.”) According to interview data eggs were a preferred food of older people, and as those generations have passed on, so has local demand.

As for turtle harvesters themselves, interviewees agreed that today they are few in number. Interviewees also made clear that there was a dichotomy between subsistence and commercial utilization of turtles, though not in those specific terms. Some knowledgeable persons stated that there were only “one or two” people who put significant effort into turtle fishing, while others put the number at “three or four.” In the words of one well-connected individual, “there are one or two younger guys who hustle and make money off of turtles.” Another individual stated that “the commercial catch is [by] younger guys. They take vacation time at the start of the season ... it helps with school expenses.”

Nets are no longer typically used to catch turtles, although they were common in the past. According to one still-active, older turtle fisherman, “there are only one or two guys who use nets for turtles now. People don’t set nets like they used to.”

Clearly, today the commercial take of turtles is marginal to the economy of Anegada as a whole, but important to at least a few individuals. (And especially, perhaps, for a few young men who have family school expenses to contend with.) In interviews some individuals were vague about specific harvest areas,

but it is known that some individuals move their dinghies to the north beaches during the turtle season for easier access to turtle grounds there. One person reported that catch areas were determined in large part by traffic. While he used to fish all around the island, he reported that his primary area was Bones Bight or east of there where there was less traffic, but that you “could fish turtles on the south side in the evenings after the tourists came ashore and the noise quieted down.” One former largest turtle fisher noted that he stopped catching turtles after seasons were implemented as “the season was during the roughest weather of the year, the time of year with the biggest seas; turtle fishing is closed during the easiest time ... people don’t even go to the trouble to make nets for the short season now.”

For the BVI as a whole, the turtle fishery is in sharp decline.

The exact number of turtles landed in the BVI has never been formally recorded. The estimated catch of green turtles has declined over the last decade from 700 in 1981 to 200 in 1985 to 71 during the 1990-1991 open season. Similarly, the estimated catch of hawksbills has declined from 400 in 1981 to 75 in 1985 to 32 during the 1990-1991 open season. (Eckert et al. 1992:1)

As developed in a later section, Anegada is still a center of this fishery, though at levels much reduced from the past. In fact, two of the individuals recommended as primary sources for information on contemporary turtle harvest have both stopped taking turtles in the past few years, including one individual who was considered one of the, if not the, premier turtle harvesters of the island.

2.4.2 Natural Resource Use Patterns Combined with Other Local Economic Activities

As discussed earlier, the economy of Anegada is neither deep nor diversified. Fishing remains a mainstay of the economy, with tourism a growing sector. On Anegada, tourism itself is a resource oriented activity—that is, people visit Anegada primarily to enjoy the environment and the perceived isolation. Government employment, though limited, is another important source of income on the island. As noted, there is wide agreement that the fisheries are in decline, though there are no quantitative trend data to describe the declining CPUE verbally discussed by fishermen themselves.

2.5 GOVERNMENT LAND ACTIVITIES IN ANEGADA

As noted earlier, from the perspective of Anegadians, the history of government involvement with lands on Anegada has been problematic for *over 100 years*. During this time government has, in the words of one interviewee, “done nearly unforgivable things.” Government action on the “Bates” development is seen as having lead to the destruction of the main way of life on the island.

On January 20, 1967, a total of 8,092 acres of the island's 9,592 acres were leased [by the Government] to ... a British corporation [Bates-Hill Corporation and its BVI subsidiary of Development Corp. of Anegada, Ltd.], for the development of a [tax haven] retiree community and tourist resort over a 199 year period ... An international jet strip, golf courses, residential, commercial and light industrial sites, a large electrical generating system, marinas, a nursery and sod farm, and a network of roads were either planned or put under construction (LaBastille and Richmond 1973:92).

Concern was subsequently expressed on the social and economic implications of the concessions granted to the corporation, particularly, in relation to the extent to which the hands of future governments would be tied virtually indefinitely and the way in which the existing residents were being confined to a relatively small area around their village. Eventually, a commission of inquiry was held under the Chairmanship of Sir Derek Jakeway KCMG OBE .

The report [by the Commission] found that there were certain conditions in the agreements which could be regarded as unfair in national terms and suggested that they should be renegotiated. It further found that the corporation had more than met its obligation to spend sums on infrastructure under the terms of the agreement and felt that the development should be allowed to proceed subject to renegotiation. The solution proved unacceptable to the government and it was decided that the interests of all the companies concerned should be purchased. Agreement was finally reached in July 1971 ... (Shankland Cox and Associates 1972: v)

Subsequent plans by others, including Anegada Corporation, a subsidiary of Sterling Bank and Trust Company of Grand Cayman, were put forth for another large-scale development. When Sterling Bank collapsed, so did any immediate plans for large scale development.

Government planning, however, has continued. While the latest Anegada Development Plan (1993) was developed in conjunction with a local advisory committee, interview data would suggest that there are several provisions of the plan, and related plans, to which a significant number of Anegadians object. One example is the amount of land that is being considered for inclusion in the National Parks system. Given that Anegadians, for the most part, do not have title to their lands, a number of interviewees felt that it was premature (if not indefensible) to set aside large portions of lands for parks *prior to the settlement of private land issues*. In rhetorical terms, Anegadians see this policy as placing the welfare of animals ahead of the welfare of people.

The fact that Anegada now has a local lands advisory committee to work with the BVI government has not been a cure-all for the lands issue. Like other small

communities, there are distinct factions in Anegada based in part on kinship ties. According to interview data, this has been the cause of some friction. The fact that the committee was appointed by government itself was the source of comment in interviews as well, suggesting that perhaps not all sectors or demographic components of the community are equally represented (although, of course, directly elected commissioners would undoubtedly face a number of the same problems).

3.0 COMMUNITY RESOURCE RECOVERY, CONSERVATION and MANAGEMENT ISSUES

This section presents summaries of community attitudes toward natural resource conservation/recovery projects, along with a brief discussion of major management strategies.

3.1 COMMUNITY ATTITUDES TOWARD RESOURCE CONSERVATION/RECOVERY PROJECTS

This section explores differential community attitudes toward existing recovery programs and attitudes with regard to potential turtle conservation measures.

3.1.1 Community Attitudes Toward Earlier/Established Recovery Projects

For Anegada, there are two primary examples of earlier/established recovery projects that have direct relevance for turtle recovery efforts. These are the flamingo and iguana projects. For reasons developed below, the flamingo project has received wide community support, whereas the iguana project has met with much greater ambivalence.

3.1.2 Community Attitudes Toward Turtle Recovery

Given that the potential turtle recovery project is not yet well defined in relation to specific areas to be considered for conservation efforts, the central issue in the community assessment of a potential turtle recovery project is the relation of Anegada residents to the land. Land title issues will be a major stumbling block to any land set-aside/protection strategies. When all is said and done, local residents do not want to give land for conservation areas when they have been waiting for over a century for title to their own land.

3.1.3 Differences Between Earlier/Established Recovery Projects and Turtle Recovery

The support the flamingo recovery project has received from Anegadians is not a good analog or model for turtle recovery efforts. There are critical differences, including the fact that the location of the flamingos (the ponds) is not in direct conflict with existing or future land use plans by Anegadians. This being the case, the flamingo recovery project is not seen as affecting the overriding land use concerns. Second, the presence of the flamingos is viewed as a draw for tourism, which is assumed to help the economy. Additionally, although flamingos were hunted to extinction in the past, they are no longer considered a local food source. (One National Parks Trust official noted that local support for the flamingo program can be seen in the fact that the program would have been

easy enough to sabotage, but that has not happened.)

Iguanas, while not being consumed in the past or at present, are seen as a tourist draw, but to a lesser degree than flamingos. Iguanas are difficult to locate and see, whereas the flamingos can be found predictably and shown to tourists. Unlike flamingos, the area primarily inhabited by the iguanas (or, more accurately, the area that has been discussed as the primary area for iguana protection measures) is on the north shore of the island in the Bones Bight area, an area that is considered to have *prime development potential*. Further, while flamingos have apparently been unambiguously embraced (or ignored) by residents, the interactions of residents with iguana researchers, or, more accurately the perceptions of residents of researchers' actions, have tainted that project.

Turtle recovery activities are in some ways unique when compared to either flamingo or iguana projects. Unlike both flamingos and iguanas⁴, turtles are a natural resource currently utilized as food. (Although overall use is apparently declining, and our data suggest that use is higher by older persons than younger persons, so perhaps turtles, like flamingos, may in the distant future no longer be considered a food source.) Also unlike flamingos and iguanas, turtles provide income to at least some Anegadians through direct commercial harvest. As in the case of iguanas, and unlike flamingos, the areas that would be natural set-asides for turtle conservation (beaches for example) may be prime areas for desired development.

There are cultural issues associated with the take of turtles as well. Interviewees universally report that there is now no communal sharing of turtles, as seen in previous generations, although turtle is still considered a traditional food. The loss of such sharing was attributed to the fact that people no longer walk the beaches and take turtles in groups, and turtling has changed since it has become part of the commercial economy. One former turtle fisherman noted that "money has changed everything," to the degree that turtles are not widely shared anymore. (One person noted that in the old days people would share the meat or sell it cheap, and sell the shell, which represents another type of change in the nature of turtle harvesting. While today there is no reported catch of trunk turtles from Anegada, this same older gentlemen noted that oil from trunk [leatherback] turtles used to be sold to the apothecary in St. Thomas.)

Further, more than one person mentioned that jumping turtles from boats is a part of the culture, and something remembered from childhood. Eckert *et al.*

⁴ One informed reviewer of this document stated that there is good evidence from another source that iguanas were in the past and are still hunted with snares on Anegada.

(1992:2) notes a certain “mystical knowledge” that accompanies the taking of trunk turtles elsewhere in the BVI, with the most common phenomena of this type being the sighting of trunk turtle silhouettes in the clouds with the head of the turtle pointing toward the nesting beach. No knowledge of this pertaining to any species of turtle was shared during interviews on Anegada.

3.1.4 Interaction of Turtle Recovery Issues with Other Community Issues

3.1.4.1 Economic/Development Boom

While the development that has taken place on Anegada in recent years is of a small scale when compared with larger resort destinations in the Caribbean, it is none-the-less relatively large for an island of Anegada’s population. This development has had direct impact on proposed conservation measures on Anegada. It has extended tourism use of the beaches (both through overnight and day use activities), and more development is both planned and underway.

The BVI “System Plan” which includes the proposed Anegada National Park was endorsed by the BVI Executive Council in 1981 and by the Anegada Lands Commissioner in 1987. The Anegada Lands Committee approved the plan in 1993 (Anegada National Park: Revenue Through Conservation, 1993). However, the development of the National Park has been subsequently impeded by land ownership conflicts on Anegada. With growing tourism infrastructure development on Anegada, the continued invasion of feral livestock on proposed park lands, and increasing unsupervised tourist traffic in the flamingo ponds, it is now imperative to immediately resolve the land-use conflicts between residents and government to begin the development and management of this unique and fragile area. (Jarecki 1996:15)

3.1.4.2 Tourism Boom

The economic/development boom on Anegada is directly related to increased tourism (and to attempting to increase tourism) on the island. The development on Anegada in recent years focused specifically on beach oriented tourism. At present, the development projects have been relatively few in number, and the projects have been small-scale in comparison with what has been seen elsewhere in the BVI. Nevertheless, there are parts of the island that have seen development where none has occurred before. Development is directed toward resource use by tourists, and the developments are themselves altering island resources by building in the coastal environment. Writing on the BVI as a whole, Jarecki notes that:

Nearly all tourists visiting tropical islands are seeking the “three S’s” namely sun, sea, and sand. This lands all of them in the coastal zone together. It puts

pressure on tourism businesses to build accommodations as close to the shore as possible, and it causes severe human and motorized traffic problems. (1996:14)

While Anegada has to date avoided “severe human and motorized traffic problems,” clearly it is experiencing, particularly on a localized basis, an increased concentration of use in the coastal zone. (Generalized environmental degradation by such development and the increase in vehicular use on the island is far beyond the limited scope of this summary report⁵.) Tourism-related businesses have increased, with taxi services and three vehicle rental businesses being among the most visible, along with “corner gift stores” commonly found in the bar/restaurants that cater to tourists, and a handful of other gift stores.

At the same time, the fact that land titles are clouded has acted as a brake on development. According to one government official,

Getting the title to the land cleared up is taking a long time to do ... because of uncertainty of title, people are staking out and using the land now [in anticipation of title claims being reinforced by use and occupancy] ... but there are limitations on what can be done with the land, as it can't be used as collateral. So it is a double-edged sword.

For sea turtles specifically, development in, and increased direct use of the coastal zone has long-term implications for beach-oriented conservation measures.

At the present time, the status of sea turtles in the BVI is jeopardized by two main factors: (1) the legal and illegal harvest of turtles and eggs and (2) the destruction of nesting and foraging habitat as a result of increasing development due to a thriving tourism industry and increasing human population. (Eckert et al. 1992:64)

While, as has been stated, Anegada’s population is not increasing, tourism is. Even limited development in the coastal area can be disruptive to turtle nesting because female turtles intent on nesting become disoriented when approaching beaches lit by artificial lighting.

Another concern regarding the tourist boom is the interaction of tourists with other natural resources.

Of particular concern ... is the taking of undersized reef fish, conch, and lobsters

⁵ For example, as one reviewer noted, the effect of sewage pollution from the growing tourism industry deserves study. Areas around the Settlement, and inside of Pomato Point, where the charter boats anchor, are likely to be particularly affected.

by non-professional fishermen and tourists. These people often have no fishing licenses, and often fish with spear guns. (Jarecki 1996:25)

According to interview data, this type of resource abuse by tourists is less of a problem than in the past, but the true extent of the problem remains unknown due to the lack of enforcement resources.

The nature of tourism on Anegada is changing, and this also has implications for turtle conservation efforts. At present, interview data indicate that the majority of tourists are visitors who come to Anegada on yachts and visit the island to explore the beaches, have meals and drinks, and return to their boats at night. Much of the development to-date has focused on this particular type of low-key tourism. There have been recent increases in construction of on-shore lodging, however, and there are plans for more lodging on the island. Customs and Immigration have opened an office on the island, allowing people to fly direct from foreign ports (St. Thomas or Puerto Rico or St. Martin). Persons staying on the island now most commonly arrive via plane (and there is some day-trip tourism by plane as well). This shift in tourist activity has implications for long-term utilization of coastal resources. For example, there will be more 24-hour facilities on the beach (which could mean problems with lighting), and tourists may be out on the beaches during the night as well.

Another man-environment issue associated with tourism, according to interviews, is the increase in motor noise from vessels around Anegada. This is not limited to tourists alone, but several long-time fishermen claim that increases in activity and accompanying motor noise has moved turtles farther offshore than was the case even a few years ago.

One former turtle fisherman reported that he has stopped fishing turtles at least in part because of the tourist business. This individual owns a business that tourists would pass by if not frequent regularly and he observed "tourists don't like to see turtles killed. They would see them here and react to them. [I] decided to find something else to do ... [now] I don't have to look over my shoulder anymore."

3.1.4.3 Other Endangered Species Issues

The two other endangered species issues on Anegada that may have a more-or-less direct bearing on community response to potential turtle conservation measures are flamingoes and iguana (*Cyclura pinguis*). Both of these species have received a great deal of attention on Anegada in recent years.

For reasons discussed above, the protection of flamingos is not directly relevant to possible community reaction to turtle conservation measures; the fate of the local iguana is another issue entirely. The trajectory of those species is different

as well. According to one knowledgeable interviewee, the difference between the community reaction to flamingoes and iguanas is the “social history” of the two species. Flamingoes were totally annihilated and reintroduced, while capture and removal of some iguanas (for breeding and introduction into the wild elsewhere) has called into question the credibility of the iguana rehabilitation efforts to local residents.

Different sources provide different interpretations of the local extinction of flamingo on Anegada. The most common explanation is that they were hunted to local extinction. The Anegada Development Plan paints a different scenario: “... Flamingo Pond got its name from the large flocks of flamingo that used to roost there prior to the 1970s. These have been destroyed reportedly due to pollution over the years” (BVI 1993:10). Flamingoes are further linked to iguanas locally in that a number of people mentioned in interviews their understanding that flamingoes were reintroduced to the island, in part, to ‘make up for’ the removal of some of the iguana.

Iguana preservation is a particularly tough issue on Anegada, because it potentially involves directly competing land uses—the prevailing attitude is that “people should get land before iguanas get land.”

The Anegada Iguana has been the subject of various studies and many recommendations for conserving this endangered specie of reptile have been made. This specie of Iguana is only found on Anegada and studies carried out in 1988 by Dr. Nummi Goodyear strongly suggest that this shy and discrete creature is declining in numbers. This was partly attributed to the fact that as many as eight iguanas could have been removed from Anegada prior to 1988 (BVI 1993:10).

A point repeatedly made by interviewees in Anegada is that the removal of iguanas for breeding elsewhere without consultation with locals was seen as unjust. This viewpoint ties directly to the strongly held belief that Anegada (and its resources) belong exclusively to the people of Anegada. Individuals stated that what was done with the iguanas was not necessarily wrong, but that *the way it was done* was not right. At present, the National Parks Trust is attempting to obtain funding for its local representative to be trained in iguana husbandry, captive breeding, restoration/revegetation, and reintroduction techniques.

It should be recognized that there are different perspectives regarding the iguana ‘removal’ from Anegada, but as varied as the perspectives are, the introduction of iguanas to another British Virgin Island (Guana Island) where there is no competition from feral animals and where the vegetation is still intact, has been, in the words of one scientist involved in the process:

...extremely successful in increasing total BVI iguana numbers. In fact, this reintroduction event may ultimately prevent the species’ extinction.

It is now intended for young animals from this second population to be used as seed animals for starting the "head start" rehabilitation program on Anegada ... [it should also be pointed out that] preferred iguana food plants are no longer available on Anegada (though they were present in the 1960s), presumably due to livestock browsing. (Jarecki 1997: personal communication)

3.2 TURTLE RECOVERY MANAGEMENT ISSUES

There are a number of pertinent management issues that relate to potential turtle recovery programs on Anegada. These include the relationship of Anegada to the BVI government, local skepticism regarding visiting researchers, interactive management issues, and perceptions regarding appropriate control mechanisms.

3.2.1 Local Attitudes to Central BVI Government

The BVI is a Dependent Territory of the United Kingdom, but enjoys a high degree of self-government based on the Westminster parliamentary model. The British Monarch is the Head of State, represented locally by a Governor, appointed by the Crown. The Governor chairs the Executive Council, which includes the elected Ministers of Government, who are the Chief Minister, the Minister of Natural Resources and Labor, the Minister of Health and Welfare, and the Minister of Communications and Works (BVI 1996:20). Primary government responsibilities are centralized within these ministries.

3.2.1.1 General Issues

There is a "strained relationship" toward, if not distrust of, the central (BVI) government on the part of Anegadians. Much of this atmosphere would seem to attributable to lands issues and the lack of the ability of the government and Anegadians to resolve the issues. Moreover, strong negative feelings toward the central government remain from the era of the "Bates" development attempt. Renwick, writing in the aftermath of this event, noted:

I am firmly of the view that the inhabitants of Anegada do not consider themselves a part of the decision making process with regard to the development of Anegada. A number of them are convinced that the Government in Tortola is seeking to deprive them of their lands ... In order to allay their fears, I recommend that an Advisory Development Committee consisting of not less than 5 nor more than 9 members should be appointed by the Minister. This Committee will advise the Minister on all development proposals to be carried out on Anegada. In this way the people of Anegada will be consulted right from the start of negotiations concerning the development of Anegada. With the passage of time this Committee could develop into a form of local government, thus giving the people a

meaningful say in the conduct of affairs of their island. (Renwick 1987:17)

From interview data, it would appear that this committee has not emerged as a form of local government. Some interviewees stated that, in their opinion, the government uses the committee as an intermediary at some times when it should be dealing directly with the people of Anegada. On the positive side, interviewees noted that for many practical purposes, the BVI is a “small place” in terms of accessibility to government representatives. That is, with a total BVI population that was under 17,000 as of the 1991 census, it is still possible for individuals to personally meet with high government officials. Nonetheless, accessibility aside, central government planning for Anegada has not met with favor among Anegadians, based on our interview data.

3.2.1.2 Cultural Issues

Perhaps the most important cultural issue between Anegadians and the central government of the BVI is “the view held by each and every person with even a single drop of Anegadian blood that Anegada in its entirety was given to the Anegadians by Queen Victoria” (Renwick 1987:9). From this it follows that Anegadians believe that Anegadians alone are entitled to lands on Anegada, and to determine plans for the island’s future. One interviewee summed up the sentiments of a number of others when he stated

Anegadians feel left out by Tortola ... Anegada is the last to be considered in the BVI. The land issue has dragged on for years and years—everything is at a standstill. [We are] part of the BVI, but it is like we are by ourselves. You can see it by the roads. We pay the same as everybody else, but look at the roads.

3.2.1.3 Natural Resource Issues

The relationship with the central government has directly impacted natural resource conservation issues on Anegada.

A plan for an Anegada National Park was proposed in 1986 by the BVI National Parks Trust and The Eastern Caribbean Natural Area Management Program, with assistance from the Ministry of Natural Resources and the Town and Country Planning Office. The proposed Anegada park would protect critically endangered species (CITES appendix I listed) such as the flamingos, the Anegada Rock Iguanas, [and] sea turtle nesting beaches. It would also include the Horseshoe reef, an area nominated as a World Heritage Site. (Jarecki 1996:15)

The parks plan has not been implemented nor, according to interview data, is it likely to be implemented while land ownership and use questions remain unresolved.

3.2.1.4 *Impact on Turtle Conservation/Recovery Issues*

The problematic relationship between Anegada and the central government, specifically over the question of land status, does and will continue to have an impact on turtle conservation/recovery issues. In order for a successful plan to be implemented, it would need to have both local support and central government support.

3.2.2 Skepticism Regarding Visiting Researchers

3.2.2.1 *History*

A number of interviewees expressed skepticism regarding visiting researchers. Most comments along this line were directed toward the problems that local residents had with the way the research for the iguana program was run. It was felt that the researchers were not straightforward with the community, particularly about removing iguanas from the island. One person also commented that the "iguana experts are not from here and they do short-term studies. [They are] specialists and see only one thing ... they need to talk to local people ... when looking at animals, you need to talk to the local people wherever you go."

Undoubtedly, there are a number of reasons beyond the iguana program that feed into the history of skepticism Anegadians hold for outside researchers. From an outside perspective, it would appear that at least some of the individuals involved with the iguana research program have taken a number of concrete steps to obtain community involvement, and have done so over a period of more than 10 years. Clearly, there are a number of factors at work that involve an understanding of the local perspective on and analysis of motives of outside researchers and the history of development-related research on the island (and the issues of local control over local resources). While this history cannot be fully analyzed in this summary paper, it is important to recognize that these attitudes influence the local reception of proposed research and conservation programs.

3.2.2.2 *Impact on Turtle Conservation/Recovery Issues*

Undoubtedly, historical experience with iguana research will carry over into local perceptions of turtle conservation and recovery issues. To the maximum extent possible, it is important to involve local personnel in the early stages of the research process so goals of the research are not later called into question.

Anegadians will also have problems sharing potentially sensitive information with visiting researchers. A case-in-point for sea turtles is information on

poaching, which may be critical to assess turtle population dynamics and to monitor the efficacy of conservation measures.

The opportunistic harvest of sea turtle eggs for personal consumption occurs year-around (despite the 1 April- 30 November closed season) and is considered a serious threat to sea turtle conservation. All factors indicate that the level of poaching has decreased in recent years, but the proportions of nests poached remains unknown ... Poaching has been reported ... [on a number of beaches on various BVI islands and] ... all around Anegada. (Eckert et al 1992:3)

As noted earlier, persons interviewed on Anegada, with one exception, reported that eggs were no longer harvested or eaten. This is an issue that must be resolved, and natural reticence to discuss illegal activities with visiting researchers must be worked around in order to facilitate an accurate assessment of this issue.

3.2.3 Interactive Management Issues

Any designation of turtle nesting set-aside area will require that a number of interactive management issues must be addressed in order to see such a project to fruition. These include issues related to the presence of feral cattle, cats and dogs.

3.2.3.1 Cattle Restrictions

Following the demise of agriculture on Anegada, cattle have freely ranged on the island. In a study on the birds and mammals of the island conducted in the early 1970s, no native land mammals were found other than bats. Rats and mice were found to be present, along with "several types of domestic mammals ... and many exist there in a feral state. A few sheep, cattle, donkeys, and several goats are scattered about the island and are apparently little tended by the villagers" (*LaBastille and Richmond 1973:97-98*).

Interview data would suggest that there are two types of cattle from the perspective of interviewees: garbage cows and others. Garbage cows are those that live around the dump area and are reportedly undesirable because of that association. Individuals did report that other cows were taken for their meat on occasion, but that this was not a frequent occurrence. At this time there are apparently no cows being actively tended or raised for their milk production.

Interviewees disagreed about the impact free ranging cattle are having on the environment of Anegada. For the most part, Anegada is covered by low scrub vegetation with a wide variety of cacti and other drought resistant succulent plants (*BVI 1993*). According to the Anegada Development Plan, "animal grazing has badly exposed the soil leading to its poor soil quality and in some cases areas

completely void of vegetation" (pg. 9). In interviews, a number of people mentioned that cattle have roamed the island for generations, even when the walls were intact, as they were only confined to the walls for part of the year. This was taken as evidence that cattle are now part of an island system, and inherently not responsible for environmental damage.

One interactive impact that people did show an awareness of concerns the destruction of iguana habitat by cattle. Different respondents had different opinions on whether or not this was true, with the common response in the negative category being that cattle and iguana have coexisted on the island for many years. Of course, patterns of use by cattle have changed over the years with cattle roaming the island all of the time now since the loss of the walls to enclose pasture. When walls and other fencing were intact people report an annual rotation. As for potential interactions between cattle and nesting turtles, a number of individuals reported that they did not feel that would be a problem, as in their opinion cattle do not typically go on the beaches. National Parks Trust personnel also reported that they have not seen evidence that cattle, goats, and donkeys are disturbing the beaches. This remains an unanswered empirical question.

3.2.3.2 *Feline Control*

Feral cats are a recognized problem for the wildlife of the island, as they are predators of juvenile iguana. As destructive as they may be in some respects, a number of people noted they would not be in favor of total eradication, because of the effectiveness of cats for rodent (*i.e.*, mouse and rat) control. In short, control of feral cats is an acknowledged issue; how this would be done without negating their positive aspects is unknown.

3.2.3.3 *Canine Control*

According to interview data, there are no feral dogs on Anegada. Since interview coverage was not universal, it is possible there are some feral or semi-feral animals, but these seem to be few in number. A study in the early 1970s noted that "feral cats roam over most of the island, while the few dogs to be seen are found only around the village" (*LaBastille and Richmond 1973:98*). National Parks Trust personnel noted that they had not heard of either dogs or cats being a problem with respect to turtles. (Directed beach sampling would help answer this question.)

Some people did mention, however, that there were individuals who did not control their animals when they were out in the bush, and that these animals may be responsible for the destruction of iguanas or other wildlife. While there have been reports from elsewhere that dogs have destroyed turtle nests, how

destructive dogs are to turtles on Anegada is unknown at this time.

3.2.3.4 *Iguana Protection*

The seeming inability to communicate to Anegadians the seriousness of the loss of iguanas on Anegada does not bode well in building local support for turtle protection measures. Both problems touch on freedom of land use for Anegadians. In quite a number of interviews, individuals expressed the opinion that contrary to statements by researchers, iguanas are holding their own on Anegada.

3.2.4 Perceptions Regarding Control Mechanisms

3.2.4.1 *Current Enforcement/Compliance Issues*

Interview data suggest that enforcement and/or compliance with existing natural resource conservation laws is problematic on Anegada. One repeatedly cited example is in the area of marine enforcement where there is a single fisheries officer responsible for enforcing fishing regulations on one of the larger barrier reefs in the region. Individuals are of the opinion that there is not enough support from the BVI government, particularly in the area of marine enforcement, especially given the impression of Anegadians that illegal foreign fishing in the Exclusive Fishing Zone is a chronic problem. Beyond enforcement issues, "the absence of adequate legislation to protect coastal and marine resources makes it virtually impossible to effect and enforce management plans that have been prepared" (*Drayton 1995, cited in Jarecki 1996:22*).

3.2.4.2 *Perceptions Regarding Likelihood of Future Compliance/Poaching*

Since specific conservation measures were not proposed, it was not possible to assess the likelihood of future compliance or poaching. It should be noted, however, that as long as lands are in dispute, construction of beach facilities whether legal or not, is likely to continue. As for poaching itself, that would appear to depend primarily on the availability of markets and, again, with the current level of poaching not well understood, discussion of future poaching would be premature.

4.0 ANALYSIS OF ALTERNATIVES

This section summarizes the alternatives to turtle and turtle egg harvesting activities, and discusses alternatives regarding possible protected turtle nursery areas.

4.1 ALTERNATIVES TO TURTLE AND TURTLE EGG HARVESTING

4.1.1 Disincentives to Stopping Turtle and Turtle Egg Harvest

As noted, some continuing turtle harvesting takes place both for commercial and subsistence use of turtles. In the present Anegada economy, there are few non-economic incentives for local fishermen to stop taking turtles. In interview data, several individuals who formerly, but no longer take turtles cited economic reasons for discontinuing their harvest. That is, the price fell low enough and the season was short enough, that they did not consider it worth the effort. In at least one case, it was a combination of low price and a perception of a decline of the local turtle population that prompted the individual to discontinue turtle harvesting. In the words of one interviewee, "the market isn't there and the turtles are nearly extinct ... now you get \$2.50 per pound and the restaurants get \$15-20 per plate. It is nonsense." Others stated that sometimes even less is obtained per pound for turtle.

Conserving turtles on Anegada, given that the reported take is at sea, depends in large part on market forces. As long as there is an open season and a legal commercial market within the BVI, and the economy of Anegada is not an exceptionally vibrant one, it would appear that some Anegadians will consider it worthwhile to harvest turtles for commercial purposes. Clearly, however, there are differences of opinion on this on Anegada, based on interview data.

For subsistence use, the question is somewhat different. According to interview data, turtle is an acquired taste, and some younger people do not like turtle. On the other hand, again according to interview data, there are a significant number of families that take one or two turtles during the season for personal consumption. As a locally available and traditional food, it would take more than market forces to provide disincentives to this type of harvest.

4.1.2 Alternatives to Replace of Turtle Harvest

4.1.2.1 *Viability of Substitution of Harvest of Other Local Resources*

Although no one is economically dependent upon turtles, for at least some individuals the supplemental income is important. Furthermore, for those who still fish turtles commercially, there are few, if any, unexploited alternative

marine resources that could be harvested instead.

In considering alternatives to harvest of turtles, the Anegada harvest needs to be seen in a BVI perspective. Even in the absence of hard data, existing estimates show that Anegada has a central place in the BVI fishery.

Formal catch statistics [for the BVI as a whole] have never been kept ... [an owner of a seafood company in Tortola] ... estimated that 250 green turtles were landed in 1983, 225 in 1984, and 200 in 1985 ... His figures were computed by doubling the reported catch on the island of Anegada, where most of the turtles had been captured ... Today it is still true that more green turtles are landed than hawksbills, although the turtles are, in general, smaller than they were a generation ago and the total harvest has been reduced to 10% of what it was a decade ago ... The fishery is still centered in Anegada, which supplies at least half of the annual catch. Most netting is done off the western coast of Anegada in sea grass habitat. Turtles are also caught by "jumping"; that is, leaping onto them from a boat. Two fishermen caught 35-50 greens (8-10 per trip) this way off Anegada during the 1991-1992 season ... In the case of hawksbill turtles [according to this same owner] 100 hawksbills were landed in 1983, 75 in 1984, and 75 in 1985 (calculated by doubling the number of landings reported for Anegada). (Eckert et al. 1993:13)

This information suggests that though it is a marginal economic activity in the overall scope of Anegada's economy, the turtle harvest from Anegada is a very significant portion of the overall turtle harvest for the BVI. As long as there is a market in the BVI, and as long as turtles harvested from around Anegada represent a large proportion of the market (presumably because of the relative unavailability of turtles in other BVI locales), the total elimination of harvest by Anegadians through providing alternatives to harvesters appears unlikely. That is, as long as there is a demand for turtles in the BVI, it would seem that Anegadians would be the last to give up trying to meet that demand.

4.1.2.2 *Substitution of Other Economic Activities*

Alternative employment for turtle harvesters may be found in tourism-related businesses, but there are considerable constraints on this, given the present level of tourism development, and the family nature of most businesses. That is, most tourism-related businesses on Anegada are small-scale and offer limited employment opportunities.

One individual who harvests turtles commercially also has a tour guide business visiting anglers who are interested in bonefishing the flats. This is not a "direct harvest" activity for this individual as is commercial fishing. Reportedly, business has been good, but this (and other employment) has not dissuaded this individual from continuing to harvest turtles. In other words, the decision to

harvest or not harvest turtles is not directly a function of income. If a compensation strategy was employed to make discontinuation of commercial harvesting more acceptable to current harvesters, it is important to realize that income substitution alone may not be a sufficient incentive.

One reviewer noted that "Cultural values, especially in a small isolated community such as Anegada, are strong, and, as Eckert has pointed out, turtle fishing is considered a BVI heritage" (Jarecki 1997: personal communication). Clearly from the interview data, turtle fishing is considered an essential element of the heritage of Anegada.

4.1.3 Different Perceptions of Alternatives to Turtle Harvest

Because of the limited season during which turtles are hunted, and the relatively low prices paid for turtles in the market, interviews state that turtle fishing is not an economic "necessity" for the Anegadians involved, in the sense of economic "dependence." The income may still be considered important to the turtle fishers.

4.2 ALTERNATIVES REGARDING POSSIBLE PROTECTED TURTLE NURSERY AREAS

4.2.1 Existing Uses of Potential Protected Areas

There are literally miles of beaches of Anegada that are "unused" as economic resources at present. Tourism use of beaches is concentrated around existing facilities. Relatively few tourists explore the island and its beaches on their own by bicycle, rented skiff or rental car.

A recent trend is the development of beach-oriented businesses that do concentrate beach use. These businesses have not been planned with natural resource conservation as a criterion in determining their location. More development is planned for the island, and lands that have been suggested as candidates for inclusion in the National Park system have seen some development. As noted earlier, surveys of the north shore beaches have shown them to be perhaps the richest nesting areas for green turtles in the BVI. At present, there is little development on the north side, with one restaurant/bar on the beach and another development under construction.

4.2.2 Local Evaluation of Desirability/Feasibility of Potential Protected Areas

The overriding concern of persons interviewed on Anegada is that before sites are considered as set-asides for turtles or other wildlife, land title issues must be resolved for the people of Anegada. That is, Anegadians have experienced difficulties in obtaining title to lands for some 100 years now, and are not willing

to entertain the notion of area set-asides for turtles (or iguana for that matter) unless it is proceeded by an acceptable settlement of the lands issue. It should be noted that beach set-asides for turtles, if not accompanied by adjacent at-sea closures, will not impact local commercial or subsistence use of turtles if it is the case that no turtle harvest takes place off the beaches themselves as was repeatedly stated during interviews.

Eckert, *et al.* (1992:ix), suggest the island of Anegada (in addition to selected beaches on other BVI islands) for study as Index Beaches for comprehensive study of hawksbill and green turtles. Regarding green turtle nesting:

... only five crawls were reported outside of Anegada during these three years [1990-1992], but an additional 23 potential nesting sites were documented during 1992 surveys on the northern coast of Anegada. Information is still incomplete regarding which beaches are most important to this species, but it is very likely that Anegada includes the last important nesting beaches for green turtles in the BVI. (Eckert, et al., 1992:7)

As for hawksbill turtles, "despite the fact that hawksbills are the most common nesting turtle in the BVI, they have proven difficult to study" (Eckert, *et al.*, 1992:9) and this source provides less clear of an indication of the central importance of Anegada to this species. They do, however, note that "The most important sea grass communities in the BVI are found along the south shore of Tortola, the sheltered bays of Virgin Gorda, the southwestern shoreline of Anegada, the southern coast of Jost Van Dyke, and surrounding many of the smaller islets." (Eckert *et al.* 1992). They further note that "the following beaches are good candidates for Sea Turtle Reserve status: ... [among others on other BVI islands]... the west end beaches of Anegada from Cow Wreck High Point to Pomato Point" (Eckert *et al.* 1992:25).

5.0 RECOMMENDATIONS

This section provides brief public participation recommendations, recommendations for development of education program materials, and recommendations for further research.

5.1 PUBLIC PARTICIPATION RECOMMENDATIONS

Public participation will require both government and local public involvement, possibly assisted by non-governmental organizations.

5.1.1 BVI Government Involvement

It was clear from the outset of this particular study that the BVI government is interested in participating in turtle conservation measures, and has a history of such interest. Particularly key would be the direct involvement of the Conservation and Fisheries Department. Also important would be the National Parks Trust.

The BVI National Parks Trust is a statutory, corporate body, established in 1961 to manage, preserve, and promote areas which have been legally designated national parks by proclamation of Executive Council. The Marine Parks and Protected Areas Ordinance of 1979 provided for the expansion of the system to marine areas. (DPU et al. 1994:31)

Further, since creation of conservation areas would involve broader development issues on Anegada, the Department of Town and Country Planning and the Development Planning Unit also have roles to play. Additionally, on Anegada itself, government involvement should minimally include the local District Representative, and, where land issues are involved, the Anegada Lands Committee.

5.1.2 Local Public Involvement

As noted at several points in this summary report, strongly held public sentiment on Anegada maintains that Anegada, and its associated resources, belong to Anegadians first and to the rest of the British Virgin Islands second.

Any potential conservation measures would need to be openly discussed with both the directly impacted resource users, and with the community as a whole. Meetings with turtle fishermen would be a start in this direction, along with "town meetings" for the community. Unfortunately, it is clear from the results of this study that land set-asides for turtle conservation are going to be very, very difficult for Anegadians to accept in the absence of convincing evidence of

movement toward a comprehensive land claims settlement.

5.1.3 BVI and "Outside" Non-Governmental Organization (NGO) Involvement

Because the relationship between Anegadians and the BVI government has at times been strained, there is an opportunity for a distinct role for NGOs to assist in future sea turtle conservation programs on Anegada, in conjunction and coordination with the relevant government agencies. Organizations like the Islands Resources Foundation and WIDECAST, with a history of involvement with the issues in question and the people of Anegada could facilitate conservation activities in what is otherwise a politically charged atmosphere. BVI groups, such as the volunteers associated with the National Parks Trust, could be invaluable for activities such as beach monitoring. Additionally, NGOs have the potential to identify outside resources, an important advantage given the budgetary constraints of BVI government agencies. These NGOs might, for example, obtain funding to sponsor basic research needed before conservation measures, such as close monitoring of beaches and the selection of candidate sites are implemented.

5.2 RECOMMENDATIONS FOR TURTLE RECOVERY STRATEGIES

5.2.1 Environmental Education

According to published sources, there are educational materials that have been developed for use in local schools.

The Conservation and Fisheries Department together with the Department Education have concentrated on getting environmental subjects into the school curriculum. To date the emphasis has been at the primary school level focusing on areas such as coral reefs, beaches, mangroves and turtles as well as the coastal ecosystem. Since the establishment of this primary school programme, the emphasis has now shifted to the secondary school level (DPU et al., 1994:7).

Perhaps as important would be the development of educational materials for current users of turtles. Again, however, as long as there is an open season and a market for turtles within the BVI, the efficacy of educational materials is open to question with regards to direct harvest.

On the other hand, Anegada is seeing development in beach areas where none has occurred before. Materials directed toward making development as least disruptive as possible, such as information on hours and types of lighting, would be timely and important.

5.2.2 Further Research and Development Needs

There are a number of pieces of research that are needed to understand the current utilization of turtles on Anegada, the use of Anegadian resources (especially beaches, near shore grazing, and nesting areas) *by turtles*, and the potential for the success of further turtle conservation measures. These include:

- Studies to determine **actual turtle harvests**. This study was of short duration by necessity. Although estimates of turtle use were obtained, on-the-ground data collection for at least one turtle season should be undertaken.
- The level of **poaching**, particularly of **turtle eggs**, needs to be confirmed. Interview data, with one exception, suggest that there is no egg take, but it is known that there is a black market for turtle eggs that make such taking a potentially lucrative undertaking. Previous works have also suggested that there is a level of nest raiding that occurs.
- In cooperation with local residents, a **beach monitoring program** should be initiated to determine which beaches would be good candidates for potential conservation areas, based on turtle use of those beaches. However, this process should focus on the long-term and recognize that intermediate steps involving the community as a whole before any proposals can be formulated for beach protection are contemplated. Beaches on Anegada are public, and a public consensus for beach area set-asides would be required.

Specifically, there is a short term need for a

- **sea turtle nesting survey** to be carried out on Anegada during at least one nesting season from June to September. Given the timing of this season, it would be an excellent project for a student intern, whether from the BVI Community College or UWI, or from a continental university. This is essential to establish the extent of use of Anegada beaches and nesting areas by sea turtles, which to date has only been estimated

If residents are to be supportive of restrictions on particular areas of beach for protected nest areas, time series data on nesting within candidate areas would seem critical. This would be a necessary building block for public support.

- Research needs to be conducted on the potential interactions of feral animals and turtles. If Anegadians are going to accepting fencing off beaches to protect turtles from predators (or “disrupters”), there would

need to be strong evidence that such interactions are taking place, contrary to local beliefs.

- Feasibility studies of how turtle nesting protection could be incorporated into a tourism attraction strategy would appear worthwhile. For example, flamingos are a tourist attraction on Anegada today. International awareness of the endangered status of sea turtles is quite high. If there were a way to fold this into the local realities of the tourist industry, this would be a strong plus.
- Training of interpreters, with assistance from the BVI National Parks Trust to market the services of the guides. In conjunction with this training and promotion, there should be development of sea turtle, flamingo and iguana interpretive programs for tourists *and BVI residents* alike, including an information center for this purpose.
- As a demonstration activity, set aside a small beach area as a nursery, where recently laid eggs would be transplanted and guarded till the eggs hatched is worth studying further. This is a labor intensive activity which provides multiple opportunities to employ, educate and reward local residents for involvement in turtle conservation. In addition this alternative would limit the areas of restricted beach access needed to ensure improved turtle hatchling survival.

It also has the potential for being a tourist attraction, to the benefit of the Anegada economy. An elevated boardwalk on the landward side of the fenced in/protected area could be constructed and the more publicity got out regarding the facility, the more likely tourists would be visit the facility. Further, with an educational focus and a turtle information center/kiosk (and perhaps videotape sales for the tourists showing the nesting and hatching available at local businesses), it would also underscore the wider importance of locally present resources.

- Cooperative research with iguana conservationists might be a good start to build public support for local endangered species conservation efforts before additional species research/conservation efforts (i.e., local turtle efforts) are initiated. Previous iguana protection measures have not been met with general public approval, particularly concerning the way in which local residents were excluded from the information loop at the beginning of the program. Today, a significant number of residents see the utility of an iguana conservation program, but ambivalence (and a certain level of opposition) still remains. A revitalized iguana conservation program would ideally focus on community involvement, and utilize further iguana conservation efforts as a confidence building measure for other potential local conservation efforts. For example, an iguana captive

breeding program on Anegada itself could become (by design) a tourist attraction and allow Anegadians to become actively involved in the decision making process regarding the placement of captively reared iguana back into the wild both on Anegada as well as in other locales.

- Detailed study of emerging **informal land rights**. Lands immediately adjacent to the beach may be considered 'common' land, or they may be considered 'private' land, regardless of the formal title status of such lands. A clear example of this dichotomy is seen in the recent beach bar/restaurant sector development, where individuals have initiated development immediately adjacent to beaches (indeed, on the inland side of the beach itself in some cases) whether or not they actually hold title to the land. These persons have obtained at least a minimal local consensus that the land is 'theirs' to develop if they choose (but with other individuals expressing concern that this may transform the adjacent beaches into 'semi-private' areas). Any move toward beach area set-asides, then, would have to look to the issue of who feels that they have claim to the lands immediately adjacent to the beaches, and involve those specific individuals and families in the process (in addition to the general public). Some Anegadians have noted that the generation whose members are now passing away is the authoritative one regarding which families have historically been associated with specific areas, so it would be useful to collect this information before understandings of family associations with particular areas become more clouded.

APPENDIX A: Participants

The following individuals on Anegada were participants in this project. Each generously gave of their time and effort, and were interviewed concerning a number of topics regarding the socioeconomic context of Anegada, and the role of turtles (and/or the potential for turtle conservation) in that context. In order to provide a glimpse of the diversity of individuals interviewed, an 'association' is provided in the list below (e.g., whether they were owners of particular businesses, etc.). It must be borne in mind, however, that many of the male participants listed as associated with a particular business are also active fishermen, or have been active fishermen in the past. Indeed, some of the business owners or otherwise employed persons are among the most active fishermen on Anegada. Further, many individuals are or have been active in more than one way of making a living over time (both on and off Anegada) or have occupied various service positions within the community.

Bellansetta 'Bell' Creque, Cow Wreck bar/restaurant, Banana Well restaurant
Wilfred Creque, Pomato Point, Anegada Beach Club, and ABC car rentals
Garfield Faulkner, Jr., Fishing guide, electric utility employee
Kenneth Faulkner, gas station, other businesses
Pat Faulkner, Pats Pottery
Aubrey Levons, Big Bamboo bar/restaurant
Gregory Levons, Customs officer
Horatio 'Mac' Norman, Mac's campground and snack bar
Darvin Potter, contractor
George Anthony 'Tony' Smith, Tony's Taxi
Captain Ian Smith, Lands Advisory Committee chair
Rondell Smith, National Parks Trust Representative
Reverend Vincent Smith, Minister
Mark Soares, Fisherman
Pam Soares, Pam's Kitchen/Neptune's Treasure
Clinton Vanterpool, District Representative, BVI government
Kevin Vuckell, Anegada Reef Hotel employee
Egbert Wheatley, Flash of Beauty bar/restaurant
Eric Wheatley, Sr., Fisherman
Eric Wheatley, Jr., Fisherman
Lowell Wheatley, Anegada Reef Hotel, associated businesses
Vera Wheatley, Vn J Gifts
Jim White, Beach Warden
Roger White, Fisheries Officer

In addition to individuals on Anegada who agreed to take part in this project, the following individuals on Tortola provided input. The information they provided, as well as their advice on the research problem and its complex setting, is sincerely appreciated.

Lynette Atwell, UNCHS Project Manager, Town and Country Planning

Nick Drayton, National Parks Trust

Lianna Jarecki, Natural Sciences Department, H. Lavity Stoutt
Community College

Bertrand Lettsome, Chief Conservation and Fisheries Officer,
Conservation and Fisheries Department

Otto O'Neal, Head, Development Planning Unit

Kelvin Penn, Conservation and Fisheries Department

Clive Petrovik, marine scientist, H. Lavity Stoutt Community College

Orville Phillip, marine biologist, Conservation and Fisheries Department

Louis Potter, Director, Town and Country Planning

Joseph Smith-Abbot, National Parks Trust

Finally, I would like to thank Bruce Potter and Edward Towle of Island Resources Foundation. Mr. Potter, as director of the project, made my participation in this process possible. Dr. Towle, with research experience on Anegada spanning three decades, provided essential background information and advice on the current project. Both individuals also reviewed this document in draft.

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