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PHYSICAL LANDSCAPE CHANGE AT SAN SALVADOR: 1942-2007

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ABSTRACT

The island of San Salvador underwent a significant transformation of its physical and cultural landscape with the construction of U.S. military bases on the island in the 1950s and 1960s. Later changes were equally significant as developments and resorts transformed the island landscape over time. I have used a combination of historical and contemporary aerial photography and satellite images to chart some of the most significant changes that have occurred to the landscape of San Salvador through the past six decades. Many of the changes are a consequence of corporate development initiatives; others result from the impact of a progression of natural forces over time.

INTRODUCTION

San Salvador Island has experienced significant levels of landscape modification over the latter half of the 20th century and the first decade of the 21st century. Some of these changes are in response to development by governmental or corporate entities. Other changes are associated with the construction of individual residences by island residents. A third area of change is a consequence of population shifts as residents abandoned traditional agricultural and gardening activities and shifted toward employment in the tourist, governmental, and service economies of the island.

The most obvious changes are those that result from the landscape modification introduced by a series of developments in

the 1950s, 1960s, 1970s, and 1990s. Respectively, these were: the construction of U.S. military facilities at Graham's Harbour, Rice Bay, and in the vicinity of Bonefish Bay; the massive landscape modification associated with the failed Columbus Landings Development; and the construction of Club Med's Columbus Isle Resort. More recent development has been incremental and less systematic in nature. Clusters of new home development have materialized at selected locations and small-scale tourist facilities have developed in isolated locales. Additional corporate development of large-scale tourist facilities and resort homes looms on the horizon. To date, it has yet to materialize in part due to international events, such as those associated with September 11, 2001, and due to fluctuations in the global economy. Using historical aerial photographs and contemporary satellite imagery I have documented large scale changes in land use as well as changes that have occurred for specific properties and selected areas. I have also documented changes in settlement patterns and population densities for specific areas of the island.

The imagery utilized in this paper was accessed through the San Salvador GIS Database developed by Matthew Robinson of the University of New Haven GIS Laboratory. I also accessed satellite imagery that is available online through the Google Earth website and is derived from various sources.

The imagery consisted of:

- 1942 black-and-white aerial photographs on file with the Bahamas Land and Surveys Department
- 1968 black-and-white aerial photographs acquired in support of the development of the 1972 topographic map of San Salvador
- 1999 color infrared imagery acquired by Jack Berry for selected parts of San Salvador
- 2002-2007 satellite imagery downloaded from the Google Earth website

POPULATION REDISTRIBUTION

One of the major consequences of economic development on San Salvador in the latter half of the 20th century was the abandonment of traditional agricultural practices in favor of employment in the cash economy. Prior to the development of U.S. military bases in the vicinity of Cockburn Town and Graham's Harbour there was a much larger concentration of population on the east side of the island. The now abandoned Anglican Church and Primary School along the lower reaches of the Pigeon Creek Estuary serve as evidence of a high population density on the east side of the island at one point in time.

The abandonment of traditional shifting cultivation plots is clearly evidenced in Figure 1. Significant land clearance in the form of shifting agricultural plots is displayed in the 1942 image of the United Estates, particularly in the area between Fresh Lake and the coast. The 2007 image indicates that most shifting cultivation has been abandoned.



Figure 1. Shifting cultivation was widespread in the United Estates settlement in 1942 (left) but had declined significantly by 2007 (right).

Located at the north end of the Pigeon Creek Estuary, the settlement of South Victoria Hill was once a thriving community with a church, several residences and a dock. In 1942 (Figure 2) the settlement produces a bright return on the aerial photograph indicating cleared lawns and an active cultivation area. By 2007 the settlement was entirely abandoned, the buildings lacked roofing and were in disrepair, and the waterfront had become overgrown with mangroves and palm trees.

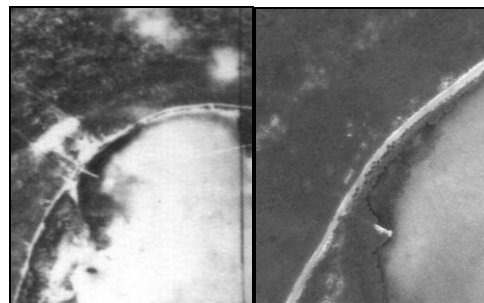


Figure 2. South Victoria Hill settlement as photographed in 1942 (left) and 2007 (right).

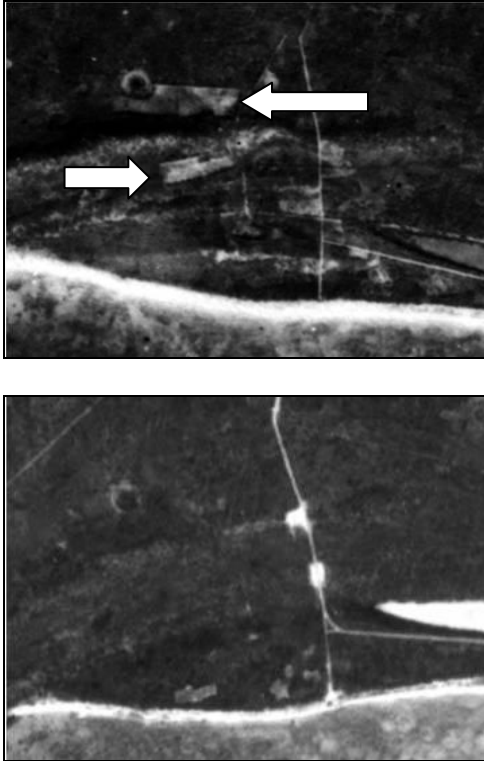


Figure 3. The area in the vicinity of the Sandy Point manor house as shown in 1942 (top) and 1968 (bottom). The white arrows indicate areas of large-scale cultivation in 1942 that are no longer in evidence in the 1968 image.

The area of the Sandy Point Estate was reportedly occupied into the early 20th century. The comparatively large-scale agricultural plots shown on the 1942 photograph of the Sandy Point Estate (Figure 3) indicates that occupation and cultivation of the land may have continued through mid-century. Any evidence of continued cultivation has disappeared by 1968 except for small plots along the coast and west of the French Bay dock.

U.S. MILITARY BASES

The 1950s brought a new type of development to San Salvador as the United States built Air Force, Navy, and Coast Guard facilities on lands made available by the British government through the World

War II lend lease program. A missile tracking station was constructed in an area that extended from Riding Rock Point to Cockburn Town. A naval facility was constructed on Graham's Harbour and a Coast Guard Loran Station was built overlooking Rice Bay.

In support of the military base construction an airport and landing strip were built in the vicinity of Riding Rock Point north of Cockburn Town (Figure 4). A monorail tracking device was a core component of the U.S. Air Force facility. It is clearly evident in the 1968 image (Figure 4). The airport runway was extended yet again in the 1990s to support the takeoff and landing of large, passenger jet aircraft from Europe and the United States (Figure 4).

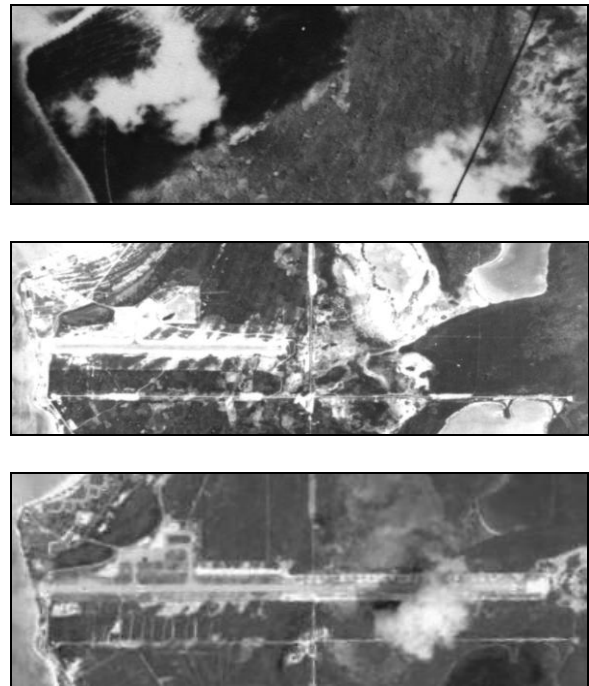


Figure 4. The area in the vicinity of Riding Rock Point as seen in 1942 with no accompanying development (top), the airport runway as seen in 1968 (middle) and the airport runway as it appeared in 2007 after being lengthened to accommodate passenger jet aircraft (bottom).

COLUMBUS LANDINGS DEVELOPMENT

In the late 1960s an ambitious effort was initiated to bring a sizeable tourist development to San Salvador. The proposed development, Columbus Landings, was indicative of the widespread global development of tourist facilities in response to increasing disposable incomes and faster, more reliable, and more affordable air travel.

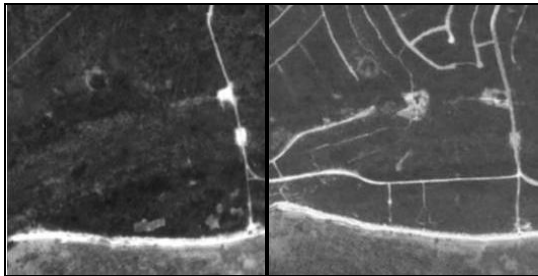


Figure 5. In 1968 (left) the Queen's Highway is the only roadway in the area of the Sandy Point Manor House. In the 2007 image (right) the remnants of the roads supporting the Columbus Landings development are clearly in evidence.

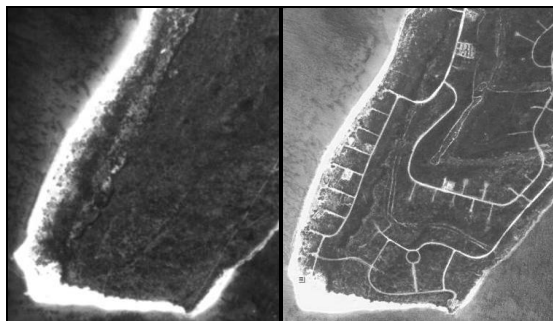


Figure 6. The photo on the left shows the area of Sandy Point as it appeared in 1968. The photo on the right depicts the remnant road layout from the Columbus Landings development as it appeared in 2007.

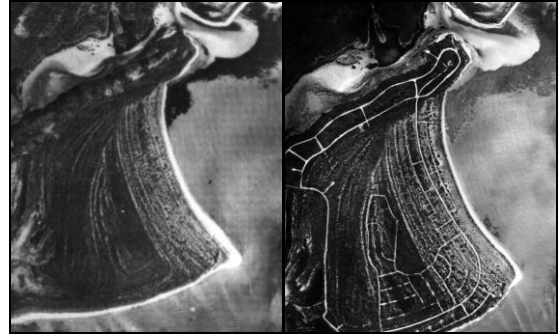


Figure 7. The Sandy Hook area (southeastern San Salvador) as it appeared in 1942 (left) and the remnant road network from the Columbus Landings development as it appeared in 1999 (right).

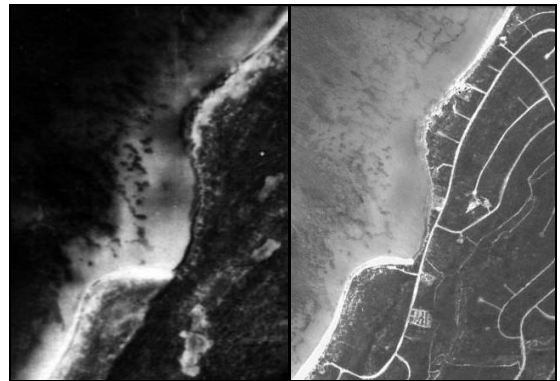


Figure 8. The Grotto Beach area as it appeared in 1942 (left) and the remnant road network from the Columbus Landings development as it appeared in 2007 (right).

Columbus Landings completely transformed the landscape of the southern part of San Salvador. Individual properties were platted, vegetation was removed, and a labyrinth of roadways appeared in preparation for the construction of individual homes, condominiums, and resort hotels. The development ultimately failed but the results of the landscape modification remained (Figures 5, 6, 7, and 8).

CLUB MED COLUMBUS ISLE RESORT

Construction on the Club Med Columbus Isle Resort had a dramatic impact on the landscape of San Salvador in the 1990s. The changes were most immediately noticeable in the development of the Club Med property located at the southern end of Bonefish Bay (Figure 9). The property had previously been the site of the San Salvador Secondary School in a structure that had been a part of the U.S. Air Force missile tracking facility.

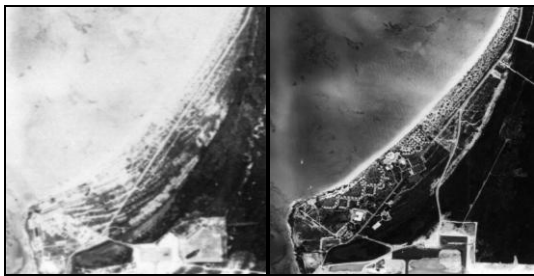


Figure 9. 1968 image of the limited development north of Riding Rock Point (left) and the development associated with the Columbus Isle Resort as seen in 1999 (right).

COCKBURN TOWN DEVELOPMENT

The development of Columbus Isle Resort resulted in accompanying development along the waterfront between the resort and Cockburn Town (Figure 10). Freighters delivering construction materials for the Columbus Isle Resort caused irreparable damage to the government dock at Cockburn Town. In response to the need for a safe docking area the Riding Rock Inn doubled the size of their marina and the Bahamian government built a second marina that could accommodate the weekly mailboat that brings freight to the island from Nassau. Other new construction in the area included; a social services building, an expansion of the electricity generating plant, church buildings housing the Seventh Day Adventist and Church of God of Prophecy congregations, medical clinic, primary school, and renovation of the Riding Rock Inn Dive Resort.

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Figure 10. Images of the coastal development northeast of Cockburn Town. Little development appears in the area in 1968 (left) in comparison to the extensive change that appears in the 2007 (right). The top arrow shows the entrance to the expanded Riding Rock Inn marina while the bottom arrow indicates the government marina.

WASTE DISPOSAL

Development and an increasing population created a serious need for a state-of-the-art sanitary landfill. Such a facility was built in the vicinity of the north end of Storrs Lake Figure 11). An island-wide waste pick-up system was developed allowing for a cleaner, healthier environment.

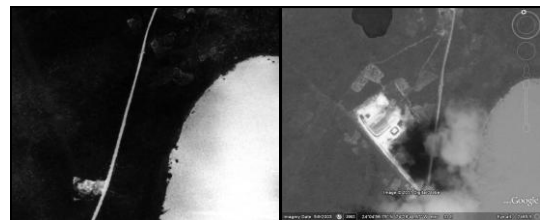


Figure 11. At one time old quarries, such as the one bordering the Queen's Highway at the north end of Storrs Lake, were used in a haphazard manner for solid waste disposal (1999 image on the left). A state-of-the-art sanitary landfill was built in the vicinity of

the old quarry and opened as the 21st century began (2003 image on the right).

DEVELOPMENT AT SUGAR LOAF

The area in the vicinity of Sugar Loaf Settlement experienced efforts at development in association with the development of the Columbus Isle Resort. Trailers that had been used as worker housing were relocated to Sugar Loaf. A horse stable was constructed on the coast east of the settlement. It was intended to supply horseback riding experiences for Columbus Isle guests (Figure 12). An ill-fated effort was made to construct a marina in the vicinity of the horse stable. Problems occurred when long-shore currents caused sands to migrate down the coast and create a persistent blockage of the entrance to the marina. As of this writing, efforts at further development of the marina have been suspended.



Figure 12. The area south of Sugar Loaf Settlement as shown in 1999 (left) and in 2007 (right). The area developed as a horse stable appears at the top of the 1999 image. A failed attempt at developing a marina adjacent to the horse stable is clearly evident in the 2007 image.

CONCLUSIONS

A tremendous amount of data has become available for displaying landscapes from around the globe. Combining contemporary digital images with historical aerial

photography allows for the study of changes that impact the landscape over time. These changes can then be evaluated on the basis of any positive and/or negative impacts they have on the local environment or if they fail to impact the environment in either a positive or negative way.

Historically, physical changes at San Salvador have been in response to large-scale development. In the 1990s, development had a profound impact on the local setting. Radical changes occurred as a consequence of that development in the form of landscape modifications undertaken for resort development, and in subsequent smaller examples of development resulting from the increased incomes made available to island residents.

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REFERENCES

Image Sources

1942: Black-and-white aerial photographs on file with the Bahamas Land and Surveys Department and scanned into San Salvador GIS Database by Matthew Robinson of the University of New Haven GIS Laboratory

1968: Black-and-white aerial photography secured for 1972 topographic map of San Salvador and scanned into San Salvador GIS Database by Matthew Robinson of the University of New Haven GIS Laboratory

1999 color aerial photography acquired by Jack Berry and scanned into San Salvador GIS Database by Matthew Robinson of the University of New Haven GIS Laboratory

2002-2007: Imagery displayed on the Google Earth website and derived from various sources.

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