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San Salvador in 1492: Its Geography and Ecology

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ABSTRACT

Christopher Columbus in 1492 could have experienced the climax evergreen woodlands of San Salvador, when he writes of very green trees, fruits, and much water. Unfortunately, since that time all of the woodland has been cleared, burned, and selectively cut at least once. In addition, the coastal topography has undergone several changes through progradation, retrogradation, and sedimentation. This has created an island which is a far different sight from that of Columbus'. A reconstruction of San Salvador is made possible through historical records and environmental processes.

INTRODUCTION

On the 12th October 1492 after 33 days at sea, Christopher Columbus described the geographical conditions of the New World. According to Columbus, his landfall, San Salvador, was an island that was quite large, very flat, and with very green trees. There was a very large lake in the center and many waters. The island did not possess any mountains and all of it was green.[1]

In making these statements, Columbus has been accused of stretching his imagination somewhat. However, one should remember that Columbus was most likely making a comparison with the islands of the Old World, such as the Canary Islands which are mountainous and deforested. In addition, San Salvador probably did have many waters in the form of ponds and tidal creeks, which through time have dried up or turned into inland lakes or salinas. Finally, those who see San Salvador today see only the modern evergreen woodland, which is only a secondary growth woodland, rather than a climax woodland.[2]

Unfortunately, there are no written records dealing with the geography of San Salvador until the Farquarhson journal,[3] which deals with the clearing of the fields and pastures. However, there is ample information

regarding general conditions for the Bahamas and other specific islands. These accounts will be used to re-create a possible scenario for San Salvador in 1492.

THE WOODLAND

The evergreen woodland of the Bahamas contains about 40% of the 60 genera which can be found in the southeastern United States. This reveals an historical relationship to that region dating to Eocene times, 40 million years ago.[4] Today, the evergreen woodland is similar to the low limestone environment throughout the New World sub-tropics with trees reaching 10 meters high and 20-30 cm wide, but in the past these same trees may have reached over 20 meters high and 60 cm wide.[5]

The evergreen woodland can be characterized into three habitats: whiteland-consisting of the Holocene dunes and beach ridges; flatland-consisting of the Pleistocene marine plains; and blacklands-consisting of the Pleistocene dunes and beach ridges. Each habitat will evolve through stages of woodland succession until a climax period is reached, if ever. Tables 1, 2, 3 were compiled by Anthony Byrne[6] to indicate the present day stages of woodland succession for each habitat. It is the historical record which should provide additional species so as to produce a more complete picture of the woodland succession.

At the time of Columbus' arrival to the Bahamas, the islands had been inhabited for about 500 years by Amerindian horticulturalists. The Lucayans, the group met by Columbus, appear to have lived in small villages and practiced shifting agriculture through the slash and burn method.[7] Just how much of the primitive evergreen woodland had been cleared with this method prior to Columbus' visit is unknown. It is known, from Columbus' log, that the Lucayans constructed canoes from a single tree trunk and that these canoes could hold 40 to 45 men.[8] The first measurement of a canoe was recorded on the 27th November at Baracoa, Cuba, with the canoe being 95 palms long. The actual length was either 7 meters or 23 meters depending on which palm unit was applied, most likely it was the later. It is believed that this canoe would have held about 150 men.[9] Therefore, if Columbus observed a canoe which held 40 to 45 men on San Salvador, it might be safe to say that it measured less than 95 palms long. Although the Lucayans may have traveled to other islands for trees, it would seem reasonable to state that large local trees were also used in the construction of canoes.

Although not much is known about the Lucayans'deforestation practices, the evergreen woodland could have recovered after the Lucayans left the islands. The European settlers began to work this renewed evergreen woodland in the late 1600's to late 1700's, and it is through the works of Catesby, Schoepf, and Harvey[10] that a clearer picture emerges as to what was

contained therein. The evergreen woodland appears to have been manipulated in two ways: by the selective cutting of commercial woods and by the growth of plantations.

The commercial uses of the evergreen woodland were for dyewoods, barks, and timber. The major dyewood trees were the braziletto (*Caesal pinina*) and the yellow wood (*Zanthoxylum flavum*), both can reach to heights of 25 feet today. The major bark trees were the sweet wood (*Croton eluteria*) and the wild cinnamon (*Canella winterana*), both can reach to heights of 20 feet today. The major timber trees were the mahogany (*Swietenia mahogani*), the horseflesh (*Lysiloma sabicu*), the pine (*Pinus caribaea*), and the mastic (*Mastichodendron foetidissmum*), all of which can reach to heights of 50 feet today. Additional timber trees were the lignum vitae (*Guiacum sanctum*), the iron wood (*Krugiodendron ferreum*), the boxwood (*Buxus bahamensis*), and the cedar (*Juniperus lucayana*), all of which can reach to heights of 25 feet today.[11] The previously mentioned historical accounts note that there was a decline in the supply of these commercial trees from the early 1700's to the mid 1800's. This appears to be the result of over exploitation. So that the economically valuable species now became rare in remotely undisturbed areas and perhaps extinct in others.

The growth of the plantation system took its toll on the evergreen woodland when the American loyalists moved into the Bahamas. Between 1780-1800, the American way of clearing larqe stands of woodland to make farmland was accomplished.[12] This technique then exposed the topsoil to the action of wind and rain. In a short time, the topsoil was depleted.[13] This wholesale clearing of the land led to the destruction of additional trees such as gum elemi (*Bursera simaruba*), wild tamarind (*Lysiloma latisiliqua*), pigeon plum (*Coccoloba diversifolia*), manchioneel (*Hippomane mancinella*), and poison wood (*Metopium toxiferum*), all of which can reach to heights of 50 feet today.[14]

After the abandonment of the plantations, the evergreen woodland began to re-build itself with weedy types taking hold first: horsebush (*Gundlachia corymbosa*), greasebush (*Corchorus hirsutus*), white sage (*Lantana involucrata*), grannybush (*Croton linearis*), strongback (*Bourreria ovata*), and the *Pithecellobium*. The continued farming efforts of the present inhabitants, by clearing and burning areas for farming, has helped to keep the islands in their secondary growth conditions.[15] Only in very remote areas is there any indication that the Pre-Columbian woodland may be returning.

THE COASTAL ZONE

The Bahama Islands lie within the northern hemisphere's tradewinds, which produce a northeasterly breeze. The tradewinds are associated with a northward longshore current, which results from the 0.9 knot current of

the Old Bahama Channel as it works its way through the islands. Together, the current and wind deposit the white/pink coral sands to form the beaches of these islands.

Although the tradewinds are fairly constant, there are seasonal variations. In the winter months, cold weather fronts are brought across the islands from the North American continent by northwesterly winds. This activity counters the normal longshore current, and now wave and surf action attack the white/pink coral sands from a different direction. In the summer months, the rainy weather is brought up from the Caribbean region by southeasterly winds, creating high rolling waves and strong winds that reshape the beaches. The wind and current then alter the coastline through the processes of progradation and retrogradation creating numerous changes since Columbus' landfall.[16]

Likewise, the tidal creeks, which flowed during Columbus' visit to the Bahamas, have also been changed. The entrances have been silted in by storms and the longshore movement of the white/pink coral sands. In addition, the topsoil run-off from the Loyalist period may have increased the sediment load of the tidal creeks which increased the sedimentation process near the inlets. This has led to the formation of inland lakes and salinas.[17]

There has also been a rise in the mean sea level since the Wisconsin glaciation. This rise in mean sea level has covered and destroyed the coastline. Core samples taken in 3 to 4 meters of ocean water near the shoreline of several islands have revealed peat deposits. These peat samples date from 4,000 to 6,000 B.P. and indicate evidence of former marsh areas now drowned.[18] The average rise of mean sea level for the past 2000 years has been estimated to be 7.5 cm[19] and 15.0 cm[20] per century. So that in 1492, the mean sea level could have been between 37.5 cm and 75 cm lower than the present. The lower mean sea level could have added to or reduced the coastal zone dimensions 50 to 100 meters from the foredune, depending on whether the coast was undergoing progradation or retrogradation.[21] These factors would have definitely created a different picture of the islands from Columbus' time to the present.

SAN SALVADOR

As the previous sections bear out, the islands of the Bahamas appear to have had more extensive evergreen woodlands and coastal zones in the past. It would then seem reasonable to state that this was also the case for San Salvador. Recently, a wooden mortar, made from the trunk of a Yellow wood (*Zanthoxylum flavum*) tree, was recovered from an inland bluehole on the island. The mortar is 63.5 cm in height, 138 cm in circumference and 44 cm in diameter. The interior of the mortar is funnel shaped, measuring 40 cm and 15 cm in diameter from top to bottom respectively. Whether the mortar was used in the processing of manioc or maize is unknown,

however a radiocarbon-14 date of 530 ±65 yrs B.P. (Beta 16732) places it prior to the timeframe of Columbus' visit to the island. In addition, I recently discovered a fallen mahogany (*Swietenia mahogani*) tree on the top of a 25 foot high hill near the northeast arm of the Great Lake. The tree was approximately 30.5 cm in diameter and may be between 50 to 100 years old. These could be considered to be good indicators for the size of the trees in 1492.

However, the ecology of San Salvador is not complete until a mention is made towards Columbus' many waters. Without a doubt, one can observe that there is a large lake in the center of the island. Previous mention was made to the tidal creeks, inland lakes and salinas. These large bodies of water can be confirmed back to the late 1700's in the Deeds and Land Grants Books at the Lands and Survey Office in Nassau. These records also reveal the location of ponds, mangroves, and surface freshwater, some of which still exist today. The size of these ponds is often dependent upon the amounts of rainfall during the year. In my travels to the interior of San Salvador, I have located additional surface freshwater areas. It would then seem reasonable to state that there existed many waters in 1492, more so if the rainfall had been abundant during the October rainy season. In addition, there is a large semi-protected area on the north coast called Grahams Harbour. This would appear to be the harbour that Columbus speaks about on the 14th of October,[22] when he and his men rowed the long boats to reach the other side of the island.

CONCLUSIONS

It would appear that Columbus was correct in his description of the landfall. The island had no mountains similar to those of the Old World. There apparently was a variety of water sources, not all fresh but still water, although their appearances today can be misconceiving. There had existed an evergreen woodland, which for the most part has been selectively cut and/or cleared for farming within the past 200 years. This then left the secondary growth woodland of today.

Using the biological, geological, and historical records of the Bahamas, there emerge conditions which can be applied to San Salvador island. These conditions can be used as evidence in stating that the island called San Salvador is indeed Columbus' San Salvador.

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2. Anthony R. Byrne, Man and the Variable Vulneraility of Island Life: A Study of Recent Vegetation Change in the Bahamas (Unpublished Ph.D. dissertation, University of Wisconsin, 1972), 291 p.
3. A. Dean Peggs, *A Relic of Slavery*, (Nassau, 1957).
4. Anthony R. Byrne, op. cit.
5. *Ibid.*; David G. Campbell, *The Ephemeral Islands: A Natural History of the Bahamas*, (London, 1978), 151 p.
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