

# Mapping Horizon Limits Using Topographical Reference Points for Determining Pre-Columbian Circum-Caribbean Indigenous Interisland Contact Routes

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Existing archaeological studies have suggested an extensive network of ongoing human travel operated between the Bahamas, the Greater Antilles, and the Lesser Antilles before and at the time of European contact in 1492. Additional evidence prompts some scholars to propose expanded contact of these areas with Mesoamerica, the rest of Central America, the northern coast of South America, and the Florida peninsula, resulting in an interconnected circum-Caribbean region. A variety of economic, political, and social influences stimulated this desire for sea and ocean movement, including migration, trading, tribute, raiding, and social connectedness. Geographic and oceanographic factors such as distance between islands and favorable winds and currents played a major role in determining the location of crossover routes, while shoreline reefs might help or hinder canoe progress and thus the selection of sea routes.

The purpose of this study is to identify and map a limited group of historically referenced and scholarly suspected routes of travel via canoes, integrating topographic, highest points of natural terrain, and geographic locational realities, nearest points of contact, to provide a sample of preferable Lucayan, Maya, Taíno, and Carib pre-Columbian interisland contact routes and to investigate possible Caribbean island travel sea avenues connecting mainland areas such as Florida, Mesoamerica, and Venezuela. The cartographic analysis of a select number of maps showing the distance along recommended interisland routes highlights the limited approach of this study, with topography features and ensuing horizon limits, distances to the highest island elevations, supporting or restricting designated routes, and recommended journey times.

**Keywords:** interisland travel, indigenous canoe travel, circum-Caribbean, topographic features, horizon limits, sea routes

Los estudios arqueológicos existentes han sugerido que una extensa red de viajes humanos continuos existió entre las Bahamas, las Antillas Mayores y las Antillas Menores antes y en el momento del contacto europeo en 1492. Evidencia adicional invita a algunos investigadores a proponer el contacto ampliado de estas áreas con Mesoamérica, el resto de América Central, la costa norte de América del Sur y la península de Florida, lo que resulta en una región circuncaribeña interconectada. Una variedad de influencias económicas, políticas y sociales estimularon este deseo de movimiento marítimo y oceánico, incluyendo la migración, el comercio, el tributo, el saqueo y la conexión social.

Los factores geográficos y oceanográficos, como la distancia entre las islas y los vientos y corrientes favorables, desempeñaron un papel importante en la determinación de la ubicación de las rutas de cruce, mientras que los arrecifes costeros podrían ayudar o dificultar el progreso de las canoas y, por lo tanto, la selección de rutas marítimas.

El propósito de este estudio es identificar y mapear un grupo limitado de rutas de viaje en canoas históricamente referenciadas y sospechadas por los investigadores, integrando la topográfica, los puntos más altos del terreno natural y las realidades geográficas de ubicación, los puntos de contacto más cercanos, para proporcionar una muestra de las rutas de contacto interinsulares precolombinas preferidas de los Lucayos, Mayas, Taínos y Caribes e investigar posibles avenidas marítimas de viaje en islas del Caribe que conectan áreas continentales como Florida, Mesoamérica y Venezuela. El análisis cartográfico de un número selecto de mapas que muestran la distancia de las rutas interinsulares recomendadas pone de relieve el enfoque limitado de este estudio, con las características topográficas y los límites del horizonte implicados, las distancias a las elevaciones más altas de las islas, las rutas designadas que apoyan o restringen y los tiempos de viaje recomendado.

**Palabras clave:** viajes interinsulares, viajes indígenas en canoa, circun-Caribe, características topográficas, límites del horizonte, rutas marítimas

## Introduction and Voyage Methodology

*...there arrived at that time [1502] a canoe long as a galley and eight feet wide, made of a single tree trunk like the other Indian canoes; it was freighted with merchandise from the western regions around New Spain.*

—Ferdinand Columbus, *The Life of the Admiral Christopher Columbus*

Archaeologists, geographers, and historians have offered numerous suppositions to explain the existence of ongoing pre-Columbian interisland circum-Caribbean contact (see Figure 1). Among the most notable factors were the desire for economic gain, most often seen as the trading and exchange of unique flora and fauna or hand-crafted finished products; the result of reoccurring tribute and warfare, seen most often at the time of European contact as raiding parties, before 1492 as local and regional territorial conflicts; the desire to initiate new or maintain existing interisland social contacts; and the phenomenon of migration, historically represented as northward or eastward movements of people emanating from the northern coast of South America or Mesoamerica, displacing previous Caribbean cultures.<sup>1</sup>

For purposes of this study, voyage data points include distance, average canoe speed, voyage duration, and period of time with horizon point navigation. The last item on this list most likely played an important role in determining interisland canoe routes for indigenous people of the circum-Caribbean, noncoastal open sea voyages. This study

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<sup>1</sup> For purposes of this article, Mesoamerica includes Belize, Eastern Guatemala, Nicaragua, Honduras, northern Costa Rica, and Yucatan.

calculates distance in nautical miles and kilometers. Average canoe speed is determined from several factors, such as combined wind and surface currents, and averaged together from monthly data points using US National Weather Service readings accessed through the [earth.nullschool.net](http://earth.nullschool.net) global interactive website, along with historical records from Columbus's first and second voyages, detailing observed indigenous canoe voyages, reported modern canoe speeds, and suggested canoe speeds from previous investigations.<sup>2</sup> The resulting parameters helped to produce an estimated canoe speed by course heading compass diagram that is used in conjunction with distance to determine voyage duration (see Figure 2).

Additionally, this study plots the highest topographic elevations for departure and destination points nearest to noted archaeological coastal village sites that scholars have suggested engaged in coastal and open sea voyages. Using these topographic data points, horizon line-of-sight values produced pictographic projection zones that indigenous voyages may have used as course headings; they could see that hill or mountain peak and paddle toward it. The open sea distances outside the shown projection circles, in fact, became “dead navigation zones,” the canoers then needing to employ other means, such as “dead reckoning” or celestial navigation, to determine and maintain course headings. One possible determination follows that indigenous canoe voyagers then selected routes, by experience, that resulted in paddling the least amount of time without a topographic reference point.

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<sup>2</sup> The author discussed modern dugout canoe speeds with a veteran dugout canoe expert, Mike Martinez of the Hui Wa'a Outrigger and Kayak Association. Martinez is knowledgeable in indigenous dugout construction techniques, and he races them in international competition in Central and South America (Personal communications beginning August 14, 2023). Richard Callaghan uses a preferred average canoe speed of 2.0 knots (nautical miles per hour), which, when taking into consideration rest periods for extended voyages, fits well into my standard figures of 1.5 knots for favorable winds and surface currents and 1.0 knots when heading into winds and surface currents (Callaghan 2017, 71). For more on Columbus and his experiences with Indigenous canoes, see Forbes (2007, 42–43).

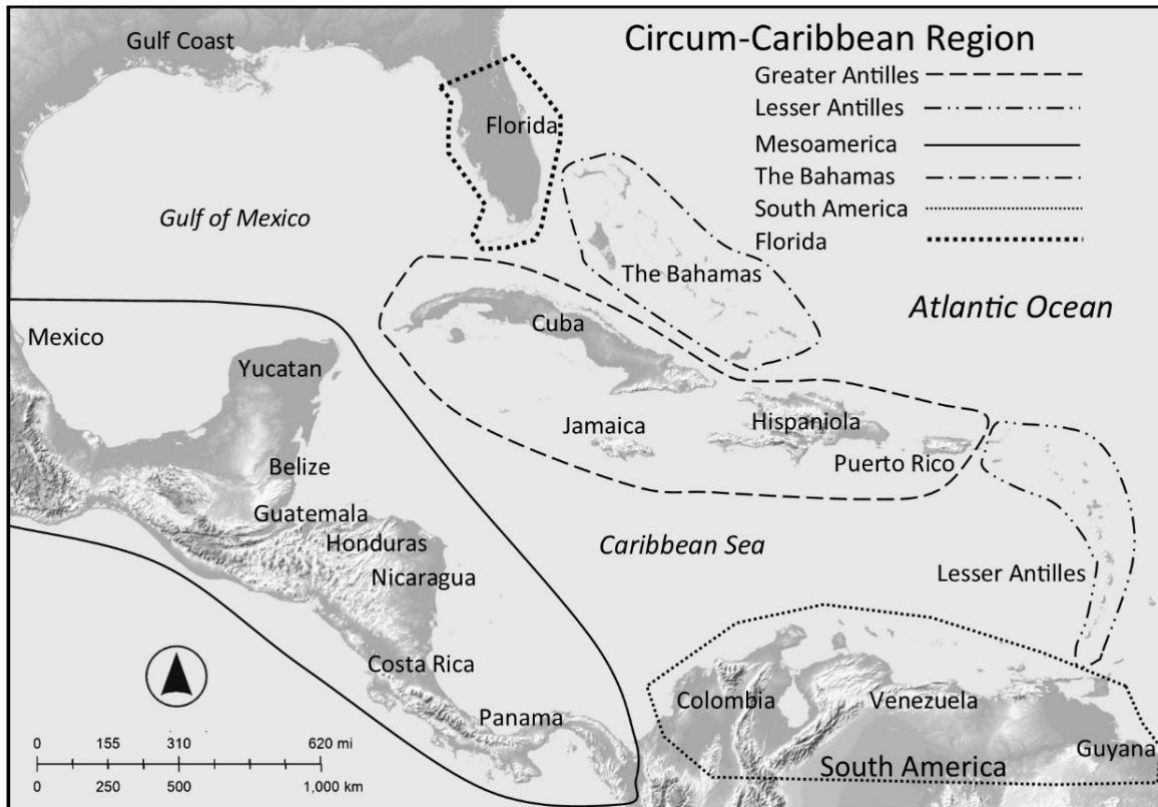


Figure 1. The Circum-Caribbean Region

Geographically, the circum-Caribbean region extends over a wide swath of water and land, from southern Mexico and the rest of Mesoamerica on the west, east to the Bahamas, then south, including the Greater and Lesser Antilles, and the northern coast of South America, an integrated political, economic, and cultural oceanographic region.

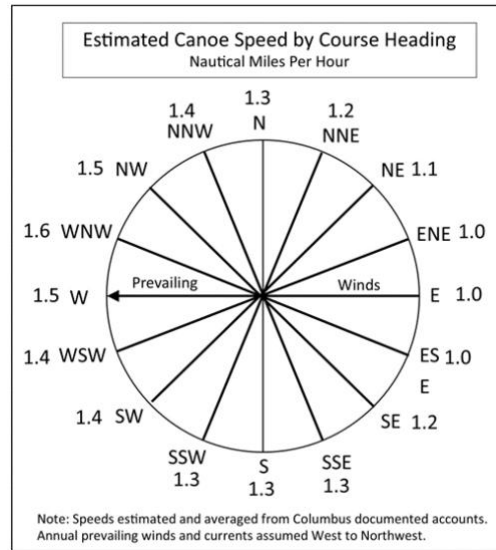


Figure 2. Estimated Canoe Speed by Course Heading

Geographic, anemological, and human factors, recorded or observed in historical and contemporary sources, are used to estimate canoe speeds by course heading for the circum-Caribbean region. For much of the Caribbean, the most efficient route for utilizing prevailing Trade Winds and surface currents is to set a course to the west-southwest, while voyages in an easterly direction decrease efficiency and extend voyage duration.

## Pre-Columbian Circum-Caribbean Migration

To date, the archaeological literature presents several scenarios for the successive human habitation of the Caribbean and the Bahamas. Current thought centers on a Lithic Age (4,000–5,000 BC) migration emanating from Central America via the Yucatan Channel to Cuba, Hispaniola, and most probably Jamaica, these people displaying a reliance on stone-flaking only.<sup>3</sup> The Archaic Age (2,500 BC) followed the Lithic Age, with ground-stone tool makers who canoed northward in a traditional migration following the line of islands that make up the Lesser Antilles, from Trinidad to Puerto Rico and Hispaniola.<sup>4</sup> Later, around 500 BC, a ceramic-making society (Saladoid pottery) ventured northward from the northern coast of South America, using the same island-hopping strategy, reaching as far as Puerto Rico. Evidence suggests that large-scale migration ceased for centuries, renewing by AD 500. Then, groups of ceramic-producing Arawakan-speaking peoples living in the Greater Antilles (Hispaniola, Puerto Rico), feeling pressure from

<sup>3</sup> Earlier studies of Jamaican migration proposed a much later introduction, around AD 650 (Reid 1992, 16–17).

<sup>4</sup> For more information on the Archaic Age migration and Ceramic Age population of the Caribbean, see Fernandes et al. (2021).

ever-increasing incursions from South America, themselves migrated to Jamaica, Cuba, and the Bahamas, the latter being the last circum-Caribbean regions to be populated (Ross et al. 2020, 1).<sup>5</sup> Militaristic Island-Caribs formed a late and aggressive migration, moving up from homeland areas along the northern coast of South America, repopling complete islands such as Guadeloupe and Martinique, and raiding as far north as San Salvador in the Bahamas.<sup>6</sup>

Pioneering scholars Irving Rouse (1992) and others placed the Carib homeland in the Lesser Antilles at an earlier date than the fifteenth century, suggesting that the Caribs concentrated their villages on islands such as Guadeloupe, Dominica, and, to some extent, St. Croix (Rouse 1992, 21–22). The Taíno represented the predominant culture in the Caribbean by 1492, successfully displacing earlier cultures, with the Western Taíno occupying central and eastern Cuba, the Classic Taíno ruling over all of Hispaniola, Jamaica, and Puerto Rico, and the Eastern Taíno struggling to survive on the islands east of Puerto Rico and north of Guadeloupe. The Bahamas, a unique case, developed a slightly different culture, referred to as Lucayan, via speech and pottery, although they remained classified as part of the Western Taíno culture (see Figure 3).<sup>7</sup>

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<sup>5</sup> Ross and the team of archaeologists noted that prior to their study, migration routes had been suggested based on unique or similar styles of pottery. For more on the Caribs, see Beckles (1992). For more information on Taíno settlement in Jamaica, see Burley et al. (2017, 337–352).

<sup>6</sup> Rouse in 1992 offered two scenarios to explain Columbus's reporting of Caribs on Guadeloupe during the second voyage (146–147). Also see Ross et al. (2020) for use of the term “invasion” when describing the Carib migration from northern South America to the Greater Antilles and the Bahamas, indicating “aggressive” and militaristic behavior. For more on the mobility of Caribs throughout the Caribbean, see Keegan (2015, 1–15). For more information on militarism and warfare in the pre-Columbian Caribbean, especially between Caribs and Taíno societies, see Siegel (2011, Abstract).

<sup>7</sup> Decorative ceramic techniques between Lucayan pottery and that of the Greater Antilles suggests a migration movement from Cuba and Hispaniola into the Bahamas. See Berman (2011, 104–105).

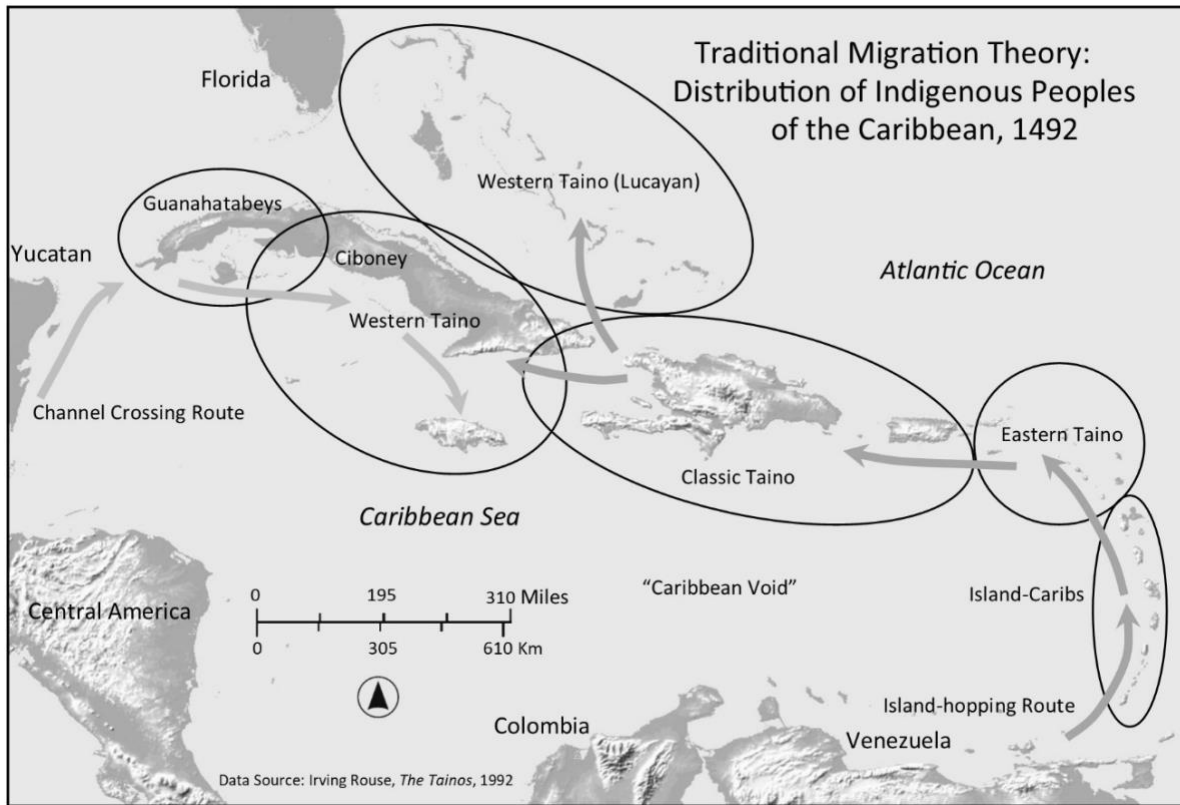


Figure 3. Migration Routes and Regions (Rouse Distribution)

The Rouse migration routes limited initial migration crossings to two options: one route beginning from the Mesoamerican coastline, particularly the Yucatan region, across the Yucatan Channel to western Cuba. Another route saw Arawakan-speaking people and later Carib tribes leapfrog from the Venezuelan northern coastal areas to islands in the Lesser Antillean Archipelago, relentlessly moving northward into the Greater Antilles and eventually the Bahamas.

Archaeologists are now challenging the above-presented description of circum-Caribbean migration and displacement. Using current technology, Ann Ross (2020) and her team of archaeologists and anthropologists studied facial morphology, i.e., variation of facial breadth, from 103 individuals (skulls) coming from ten locations, representing much of the circum-Caribbean region. The results of this study provide evidence for “repeated population migrations and expansions by various groups from different directions.” Key indications from this important study conclude what I have termed as three distinct *migra-routes*:

1. Lithic people (Casimiran Casimiroid) from Mexico-Central America regions traveled across the Yucatan Channel, settling in Cuba around 5,000 BC. This may have included a group of indigenous people known as the Guanahatabeys, as their

language differed from the later-arriving Taíno, and they did not make pottery (Rouse 1992, 20).<sup>8</sup> Traditional migration is comparable to this situation.

2. Arawak-speaking people (forerunners of the Taíno) from coastal Venezuela and Colombia migrated across the Caribbean Sea to Puerto Rico. They settled in Hispaniola between 800 and 200 BC. From here, they expanded to Jamaica and the Bahamas. This scenario supports an extended open-sea voyage directly from South America to Hispaniola.
3. Carib “invaders” from across the northern portion of South America, during the early part of the fifteenth century, crossed the Caribbean Sea, displaced existing Taíno peoples, established villages in Hispaniola and Jamaica, and, by the time of European contact, were settling and raiding the Bahamas (Rouse 1992, 131).<sup>9</sup>

The morphological study by Ross and her team of investigators has now placed a permanent Carib presence via migration on Hispaniola, Jamaica, and the Bahamas, supporting the idea of a Carib pre-Columbian invasion of the Greater Antilles (see Figure 4). Their conclusion “highlights a completely new perspective on the people and peopling of the Caribbean” (Ross 2020, Abstract). Further, the report acknowledges that “too few studies have been completed,” leaving open the possibility of additional Carib connections or adjustments to their results.<sup>10</sup> Realizing the close geographic distance between the western edges of Hispaniola and the eastern regions of Cuba, one may suggest a substantial Carib presence in the latter.<sup>11</sup>

Genetic evidence provides support for the Arawak migration from northeastern South America, working an island-jumping progression through the Lesser Antilles into the Greater Antilles from a period beginning approximately 1,700 years ago. Daniel M.

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<sup>8</sup> Spanish settlers encountering the Guanahatabeys attempted to use Taíno interpreters, but the effort proved unsuccessful. Archaeological evidence from Belize strongly suggests an origination point from Mesoamerica; see Fitzpatrick, “Seafaring Capabilities in the Pre-Columbian Caribbean,” 2013, 107–108. Alternative theories look to the Venezuelan coast as a continental departure point; see Fitzpatrick reference R. Callaghan, (2003, 119–120, 125). Also see Wilson et al. (1998, 151).

<sup>9</sup> Rouse narrows the date to around 1450. Part of his reasoning was that during the early sixteenth century, Spanish colonizers found out from discussions with Caribs in the upper islands of the Lesser Antilles that they, the Caribs, had come up from the South, conquering peoples from South America known as the *Ingeris*. In addition, until recently, archaeologists have not uncovered any Carib village sites in the Greater Antilles.

<sup>10</sup> A DNA study reported in 2018 confirms a direct link between the Lucayan people and the indigenous people of northern South America. See Schroeder et al. (2018, Abstract).

<sup>11</sup> The Ross study used twenty-one samples from Cuba obtained from the Museo de Montané, Havana, Cuba, and the National Museum of Natural History. However, it is uncertain, from this study, as to the excavation location of these samples, thus leaving open the possibility that no sample came from the extreme eastern region of Cuba. In addition, Carib settlement in Cuba may have been limited geographically by the fact that eastern Cuba, the most probable area of first contact, is the most mountainous portion of the island, isolating lowland areas such as the Guantanamo and Santiago Bay regions from the rest of the island.

Fernandes et al. (2021) suggest that these migrants “avoided close kin unions despite limited mate pools that reflect small population sizes” (Fernandes et al. 2021, Abstract).<sup>12</sup> In this manner, early population numbers may have been small in Puerto Rico and Hispaniola prior to the individuals they studied, and that “transitions in pottery styles” suggest a Caribbean environment creating “an interconnected Caribbean world.” Using ancient DNA, Hannes Schroeder et al. (2018) reported the genome sequence of a Lucayan individual believed to be at least 1,000 years old, noting that the person related closely to present-day Arawakan-speaking people from northern South America, providing further evidence that migration routes reached the northern regions of the Caribbean (Schroeder et al. 2018, 2341).<sup>13</sup>

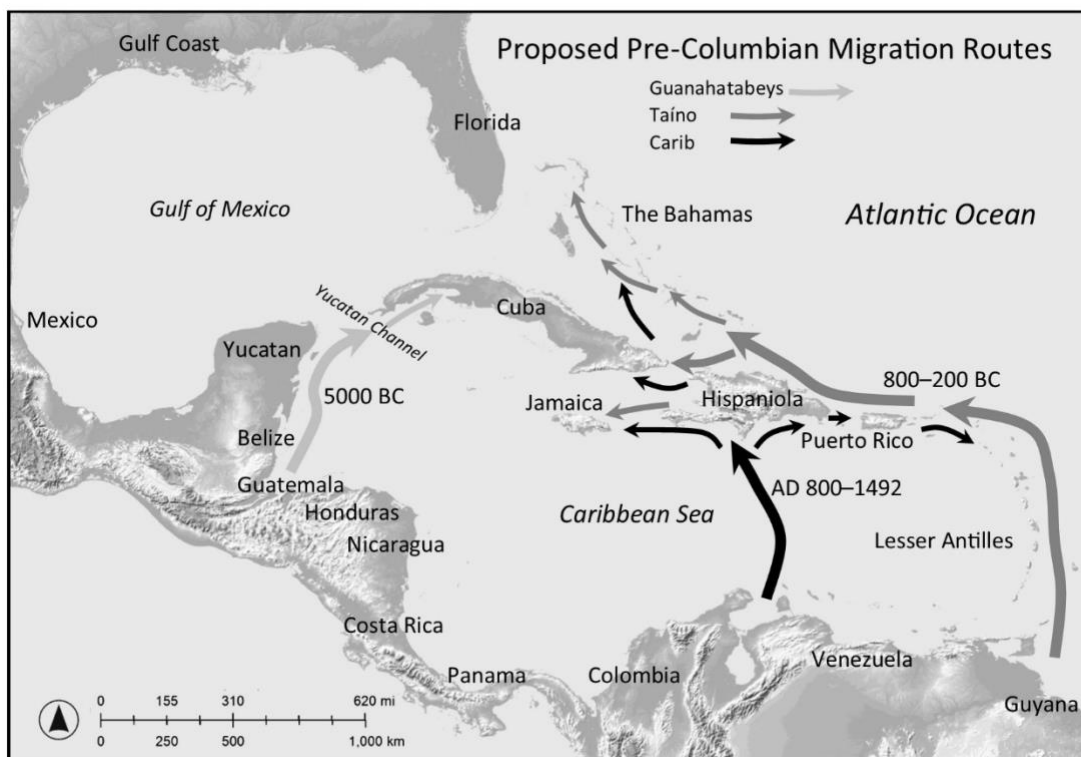


Figure 4. Proposed Pre-Columbian Migration Routes

Recent archaeological, anthropological, and genetic evidence resets Caribbean migration theory by introducing a Carib migration emanating from Venezuela directly across the Caribbean Sea to the southern coast of Hispaniola, then west to Jamaica and east to Puerto Rico. This initial movement accelerated northward with ongoing coastal raids on Lucayan villages in the Bahamas.

<sup>12</sup> The authors argue that existing population estimates for the Caribbean region are too high, proposing something less than “hundreds of thousands.”

<sup>13</sup> It should be noted that other genetic theories concerning the geographical origins of Caribbean people point to regions such as the Amazon basin and the Colombian Andes.

## Pre-Columbian Migration for Indigenous Colonization

Researchers Christina M. Giovas and Scott M. Fitzpatrick (2014) reviewed pre-Columbian migration in the Caribbean. In defining migration, they see the concept as a “movement of people across a distance,” extending the notion to include the formation of semipermanent or permanent settlements, i.e., indigenous colonization, at the location reached, in this case a Caribbean island. The term “colonization” in this study indicates an intent to engage in actions or processes of creating settlements among or near already established indigenously inhabited geographic locations, eventually asserting political, social, and economic influence and often *de facto* hegemony over the indigenous people of that region. They admit two variations: migrating people land on an unoccupied island or encounter established villages, in which case conflict may ensue with the “invading” people desiring to colonize by displacing previous occupiers or assimilating with the existing culture (Giovas and Fitzpatrick 2014, 570).<sup>14</sup>

Far from the sometimes-presented view that indigenous peoples of the circum-Caribbean lived an idyllic life amid a tropical paradise with an overabundance of food and water availability—a life free from conflict and fear—the reality is that archaeological evidence indicates otherwise. Local and regional environmental and political factors may have forced one tribal group to relocate, sometimes in small numbers and other times as a mass migration to a new location, instigating conflict with existing tribes. Noted archaeologist Irving Rouse provided one example of this phenomenon. He explained how the Guanahatabeys of western Cuba, displaying Archaic Age-like culture, and the Ciboney (Western Taíno) people, living without what the Spanish recognized as chiefdoms (*cacicazgos*) in central Cuba, were systematically invaded by Classic Taíno incursions coming from Hispaniola, pushing the former inhabitants to the western end of the island (Rouse 1992, 20).<sup>15</sup> The term “systematically” is used here to refer to intermittent raids, where the newcomers establish beachhead villages, then proceed to expand into nearby interior areas, usually along rivers, as in planned incursions. Rouse uses terms such as “repeopling” and “invaders” to describe this interisland displacement of previous cultures, usually based on ceramic remains and/or later established linguistic differences, in each of the distinct migration eras noted above. By the time Columbus arrived, Spanish colonists found the Guanahatabeys nearly extinct, living almost exclusively in isolated caves and surviving on shellfish.

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<sup>14</sup> Also see Keegan and Diamond (1987, 51–57).

<sup>15</sup> With certain exceptions, the Ciboney spoke a dialect like that of the Classic Taíno culture, as evidenced by the Lucayan inhabitants in the Bahamas (Granberry 2004, 21–22). For more on the Ciboney culture, see González Acabá (1995, 263–270).

## Post-Columbian Migration

Barbara Purdy (1988) maintains that “a handful of Spaniards could not have slain several million Indians on the island of Hispaniola in such a brief period,” suggesting that an unrecorded epidemic or forced migration occurred (Purdy 1988, 640–641). Bartolomé de Las Casas, writing during the Spanish-contact period, recognized that as early as Columbus’s second voyage, a ravaging pestilence struck Spaniards and indigenous villagers on Hispaniola.<sup>16</sup> Francisco Guerra, a Spanish physician and historian of medicine, promoted a 1493 influenza epidemic at Columbus’s first settlement in La Isabela, Hispaniola, accounting for a dramatic loss of life, both Spanish and indigenous. In a recent article, I expanded this idea to geographically model how the purported swine flu moved quickly through well-traveled interior paths on Hispaniola, finally transporting the infectious disease to other islands via canoe routes, including Cuba, Puerto Rico, Jamaica, and the Bahama Archipelago, with a remote possibility of also spreading to a limited degree to the Lesser Antilles, the eastern coast of Yucatan and Honduras, and the northern coast of South America, paddling avenues of open sea well-traveled before Europeans arrived (Rocca 2024).

In addition to the epidemic options for depopulation, Purdy cites the historical record of mass migration after Columbus’s arrival. Las Casas recorded that at least one Hispaniola cacique, Hatuéy, fled the large island in favor of landing on eastern Cuba, taking along with him, according to Purdy, “many of his people” (Purdy 1988, 641).<sup>17</sup> Estimates place the number of evacuees at around 400, including men, women, and children. These people hoped to start a new life (Backer 2008, 209). However, in 1511, Spanish conquistador Diego Velázquez de Cuéllar invaded Cuba with the intent to subjugate all tribes. Hatuéy, according to Rouse, tried in vain to warn the Cuban tribes about the impending catastrophe of Spanish incursions, the Spaniards executing many of his supporters, burned at the stake.<sup>18</sup> A large-scale migration might well have occurred as the distance covered is relatively short considering contact with any mainland area. Most scholars believe that Hatuéy originally ruled in the southwest region of Hispaniola, including the offshore island of Gonave. His *cacicazgo* (kingdom), Guanacano, came under Spanish pressure. The cacique decided to evacuate and ordered a mass migration.<sup>19</sup> Departing from Gonave, Hatuéy most likely considered two routes: direct and nonstop to Cuba or follow the western coast of Hispaniola to the westernmost tip of the Nord-Ouest peninsula, then strike out west to Cuba, riding the westerly blowing trade winds,

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<sup>16</sup> See Las Casas (1875, 114). For a comprehensive review of diseases during Spanish contact in the Caribbean, see Samuel M. Wilson’s “Surviving European Contact in the Caribbean” (1997). For a counterargument that emphasizes the impact of slavery and death in the pre-Columbian Caribbean, see Andrés Reséndez’s *The Other Slavery* (2016).

<sup>17</sup> Also see Dobyns (1963).

<sup>18</sup> See Purdy (1988, 641); Rouse (1992, 156); Stevens-Arroyo (1993, 527); and Charles (1995, 140).

<sup>19</sup> For more information on the location of Hatuéy’s *cacicazgos*, see Bernardo Vega (1998, 30).

approximately 100 miles, exacting thirty-three hours of paddling. The map below shows both options.

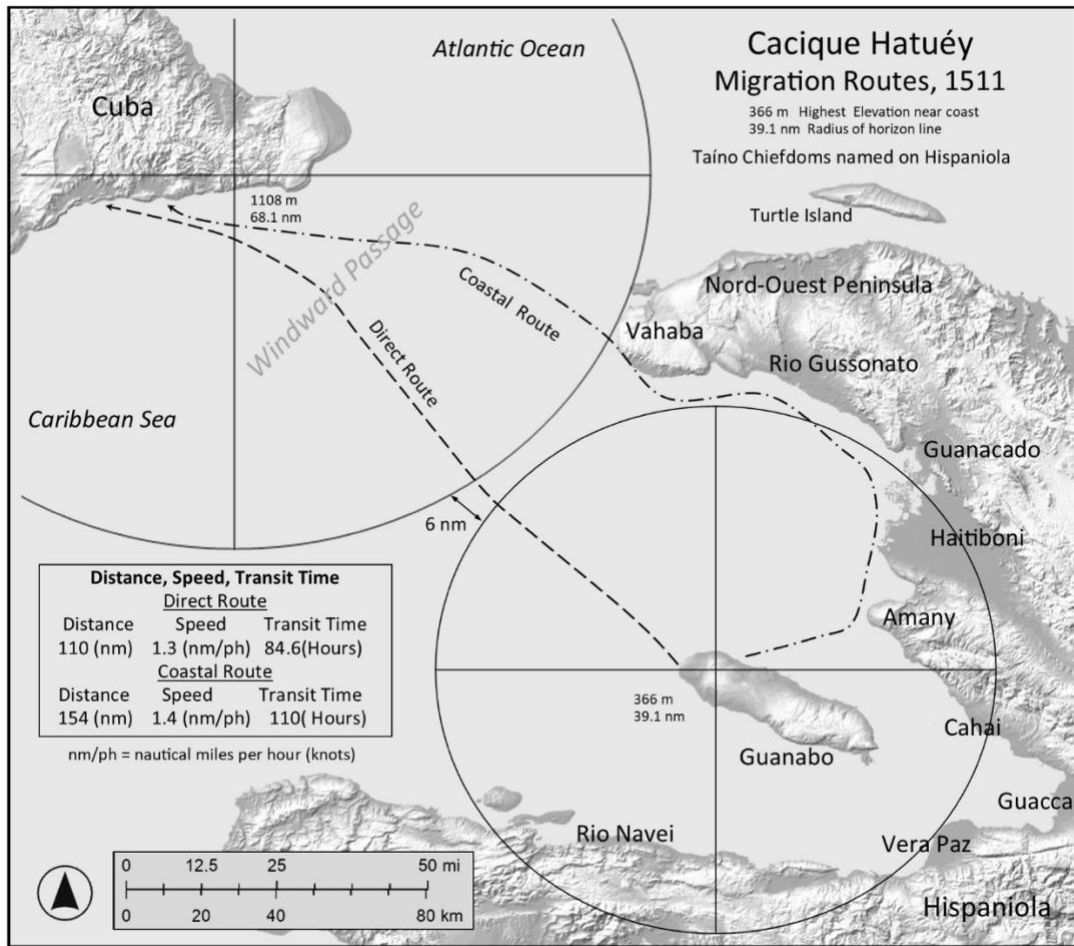


Figure 5. Cacique Hatuéy Migration Routes, 1511

Fearful of Spanish incursions and the domination of his cacicazgo, Hatuéy convinced his people to migrate from Guanabo (Gonave Island) on the western side of Hispaniola via the Windward Passage to the eastern shores of Cuba.

Purdy argues that indigenous Caribbean families retained a high degree of mobility options, writing: “They [indigenous peoples] could gather up their children and household belongings and travel rapidly with the stamina to paddle for days and weeks,” in essence, offering an ongoing opportunity for interisland migration.<sup>20</sup> Another important concept to keep in mind when considering Caribbean sea routes is the connection to a homeland place or region, encouraging “the maintenance of a ‘lifeline’ to

<sup>20</sup> On this topic, she cites John Hemmings, *Red Gold: The Conquest of the Brazilian Indians, 1500–1760*. Cambridge, MA: Harvard University Press (1978, 53). In his work, Hemming describes the rationale the Brazilian Tupinambá peoples used for their decision to flee Spanish incursions, slave-catching raids, and colonization.

the [migration] homeland through continuing interaction,” with David Watters (1998) suggesting this approach “is a logical adaptive strategy” (Watters 1998, 15).

## Trade and Exchange

On October 15, 1492, only three days after making his first landfall on the Bahamian island of San Salvador, Christopher Columbus witnessed an interisland trading or exchange event.<sup>21</sup> He deemed it a significant moment and recorded the following details:

I found a man who was passing alone in a dugout from the island of Santa María [Rum Cay] to Fernandina [Long Island] and who was bringing a small amount of their bread, which was about the size of a fist, and a calabash of water and a piece of red earth made into dust and then kneaded, and some dry leaves, which must be something highly esteemed among them, because earlier, in San Salvador, they brought some of them to me as a present. And he was bringing a little native basket in which he had a string of small glass beads and two *blancas*, because of which I recognized that he was coming from the island of San Salvador and had passed to that of Santa María and was passing to Fernandina. (Dunn and Kelley 1989, 85)<sup>22</sup>

The indigenous canoe traveler, a Lucayan, most likely came from a village on the leeward side of San Salvador. Archaeologists have discovered a large pre-Columbian village on that island at the Three Dog site, finding traces of glass beads and other items traded by the Spanish during their brief time on the island. Columbus intercepted the Lucayan midway between the islands of Rum Cay and the northern tip of Long Island, approximately thirty-five nautical miles (65 km) nonstop from his village. Apparently, the products the Lucayan carried in his canoe represented trading items, a tradition present throughout the circum-Caribbean region as studied and reported by scholars such as William Keegan (1997), Mary Jane Berman and Charlene Dixon Hutcheson (2000), and Floris W.M. Keehnen et al. (2019).<sup>23</sup>

Keegan made the point that the developing hierarchical indigenous political order in the Caribbean evolved through “organized long-distance trading expeditions” (Keegan 2007, 120).<sup>24</sup> Each ruler (*cacique*), held domain over a territorial province called a *cacicazgo*,

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<sup>21</sup> The indigenous Lucayans living there used the term *Guanahani* when referencing their island.

<sup>22</sup> Santa María is short for Santa María de la Concepción.

<sup>23</sup> Berman and Hutcheson (2000) follow the work of James M. Adovasio’s 1986 article “Artifacts and Ethnicity: Basketry as an Indicator of Territoriality and Population Movements in the Prehistoric Great Basin,” in Carole J. Condie and Don D. Fowler, eds., *Anthropology of the Desert West*. Salt Lake City: University of Utah Press, 1986, 43–88.

<sup>24</sup> This sentiment is echoed by Wilson (1990, 137).

with smaller domains absorbed into larger kingdoms.<sup>25</sup> In this way, trade flourished as an intra- and interisland activity, with people from larger kingdoms going to smaller chiefdoms for specific products not found in their region and vice versa. We know that as Columbus cruised among the Bahamas, the northern coast of Cuba, and Hispaniola, he reported seeing large “cotton trees” producing seed beds that contained cotton-like fibers. Along with cotton thread, Columbus noted that many villagers offered parrots and javelins as gifts or trade items. While the indigenous people gave these items as gifts to the Europeans, one can assume that villagers also traded these items with other villages. For example, the Lucayans on San Salvador and other Caribbean islands treated Columbus as “they normally would when a trading vessel arrived from foreign lands” (Keegan 2015, 7).

Scott M. Fitzpatrick (2013), in researching the seagoing capabilities of pre-Columbian indigenous seafarers, noted “that archaeological data has suggested to many that the sea was an artery that linked prehistoric communities together between islands and continents through exchange networks and settlement “lifelines” (Fitzpatrick 2013, 129). He references a 1969 article by C. R. Edwards that lists “scenarios” of possible contact within the circum-Caribbean region for trading purposes. Edwards first lists nonstop voyaging in the open sea, followed by various ongoing coastal trading traditions, some formal, others more informal (Fitzpatrick 2013, 129).<sup>26</sup> Rouse (1992) observed that specific villages or regions specialized in their trade products. He pointed to the beautiful wooden bowls carved by villagers on Gonave Island, off the coast of western Hispaniola (Rouse 1992, 17).<sup>27</sup> Rouse also wrote that some interisland trade routes buzzed with activity, citing the daily exchange of goods between eastern Hispaniola and western Puerto Rico via the Mona Passage.

One example from Columbus’s third voyage attests to the size and variety of goods traded along the Mesoamerican coast. Ferdinand Columbus summarizes the event, recounting how his father’s ships stood off the coast of Honduras, near the island of Guanaja, when,

there arrived at that time a canoe long as a galley and eight feet wide, made of a single tree trunk like the other Indian canoes; it was freighted with merchandise from the western regions around New Spain. Amidships it had a palm-leaf awning

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<sup>25</sup> There were five major caciques ruling five provinces on Hispaniola: Marien, Xaragua, Higüey, Magua, and Ciguayos (Keegan 2007, 28).

<sup>26</sup> Also see C. R. Edwards, “Possibilities of Pre-Columbian maritime contacts among New World Civilizations.” In: Kelley, J. C., Riley, C. L. (eds.), “Pre-Columbian Contact within Nuclear America,” *Mesoamerican Studies* 4 (1969), University Museum, Southern Illinois, Carbondale, pp. 3–10.

<sup>27</sup> Indigenous travelers may have traded the bowls during voyages to the western shores of Hispaniola and the shoreline villages of eastern Cuba. Recent evidence also points to the production of metals artifacts as trade items for exchanges occurring around the Greater Antilles and possibly with the mainland America. See Martín-Torres et al. (2012, Introduction).

like that which the Venetian gondolas carry; this gave protection against the rain and waves. Under the awning were the children and women and all the baggage and merchandise. There were twenty-five paddlers aboard, but they offered no resistance when our boats drew up to them. (F. Columbus 1992, 232)

To Columbus's delight, the natives revealed their cargo of trade items, anxious to barter. Eager indigenous traders presented finely woven cotton mantles and embroidered shirts without sleeves, some dyed in a variety of colors and designs—the most sophisticated use of cotton yet seen by the Europeans. Another item was stout wooden swords “with a groove on each side where the edge should be, in which were fastened with cord and pitch, flint knives that cut like steel” (F. Columbus 1992, 232). Copper-tipped hatchets also caught the eye of Columbus, as never before had he seen on Hispaniola such a fine use of metal. To add to the diversity of trade items, the Indians brought out roots, grains, and a “wine” apparently made from distilling maize.

Researchers have long known that, in addition to the Caribbean, the Gulf Coast region and the Atlantic coast served as highways of trade for tools and items made from shell, bone, and wood. Victor Thompson and John Worth (2011) argue that chemical analysis of archaeological specimens suggests a pattern of “long-distance prehistoric trade networks” (Thompson and Worth 2011, 59). They go on to describe how shell tools and weapon production resulted in the creation of axes, hammers, and knives that workers honed to a high degree of craftsmanship in southern Florida. In terms of bone use, indigenous peoples used avian bones and stingray spines to fashion various fishing implements, including fishhooks. Shark teeth also proved useful once sharpened to serve as “utilitarian cutting or engraving implements” (Thompson and Worth 2011, 61). The above-named items represented a portion of the many items traded along the northern zone of the circum-Caribbean by indigenous peoples using dugout canoes, vessels large enough to hold substantial quantities of people and trading goods. Purdy believes that evidence does exist to confirm a regular trading system between Florida and the West Indies, especially Cuba (see Figure 6). While scholars have challenged this theory, Purdy cites examples such as “gold ornaments of native Colombian style [that] have been found in Florida” (Purdy 1988, 641).<sup>28</sup>

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<sup>28</sup> Purdy goes on to explain that most of the existing evidence is based on post-contact written accounts and that more archaeological connections need further research. For background archaeological work on the Florida-to-Cuba connection, see Bullen (1974).

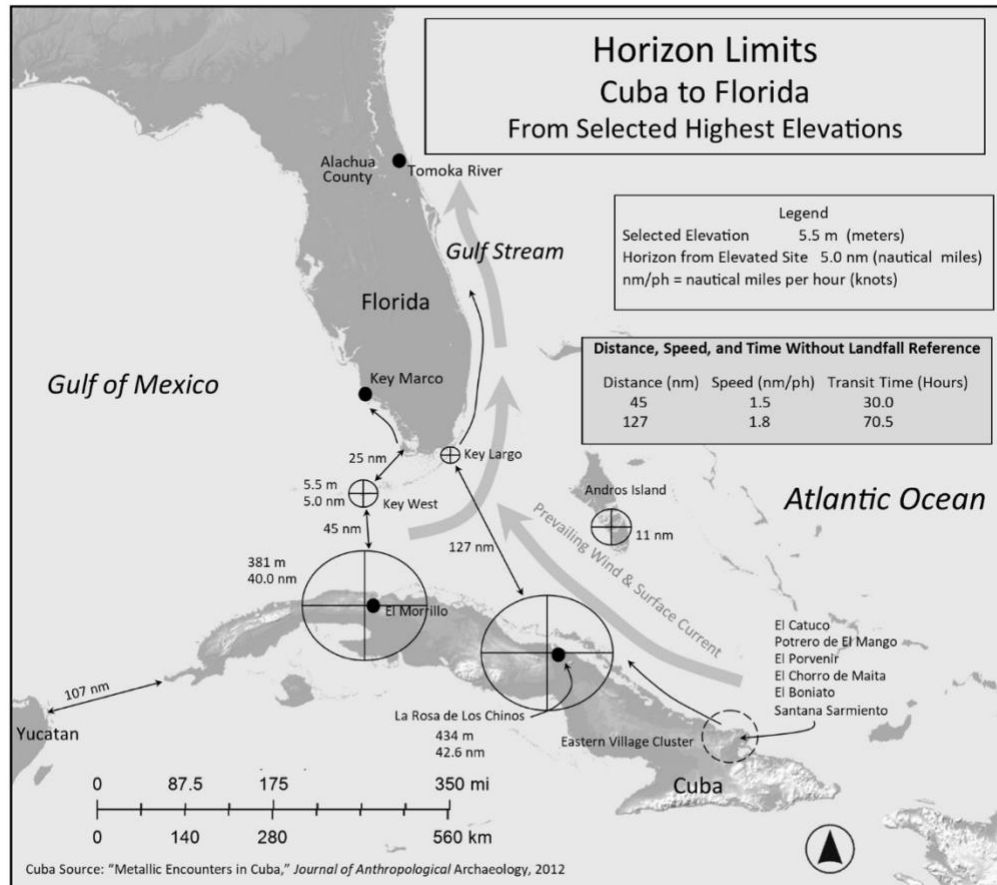


Figure 6. Horizon Limits: Cuba to Florida

Canoe travel between the north coast of Cuba and southern Florida is certainly within the realm of consideration. Key points of departure from selected known village excavation sites reveal a limited time of transit without horizon identification. The 88-nautical-mile journey from the large village of El Morrillo to Key West left the paddlers with 45 nautical (83 km) miles of unseen land.

William Keegan (1997) has studied several indigenous sites on Middle Caicos Island, part of the Turks and Caicos Islands. In particular, his study of one large site designated MC-6 revealed that the former village "is unlike any other site in the rest of the Bahamian archipelago and is more typical of chiefly villages in the Greater Antilles" (Keegan 2007, 182).<sup>29</sup> Inhabited late in the migration process, probably during the fourteenth century, villagers at MC-6 collected a variety of marine and terrestrial resources for trade with communities on the northern shore of Haiti, such as coral fish and the extraction of salt (see Figure 7). Extensive reefs run the entire length of Middle Caicos's northern shore, enclosing a rock-strewn inner harbor, allowing canoe maneuvering but dangerous to

<sup>29</sup> Theodoor de Booy (1918, 37–51) recognized the importance of cotton as a bartering commodity in the Caicos Islands.

larger sea craft. Keegan believes that settlements were established on the Middle Caicos to supply En Bas Saline, Guacanagari's large village, just inland from Cap-Haïtien, Haiti.

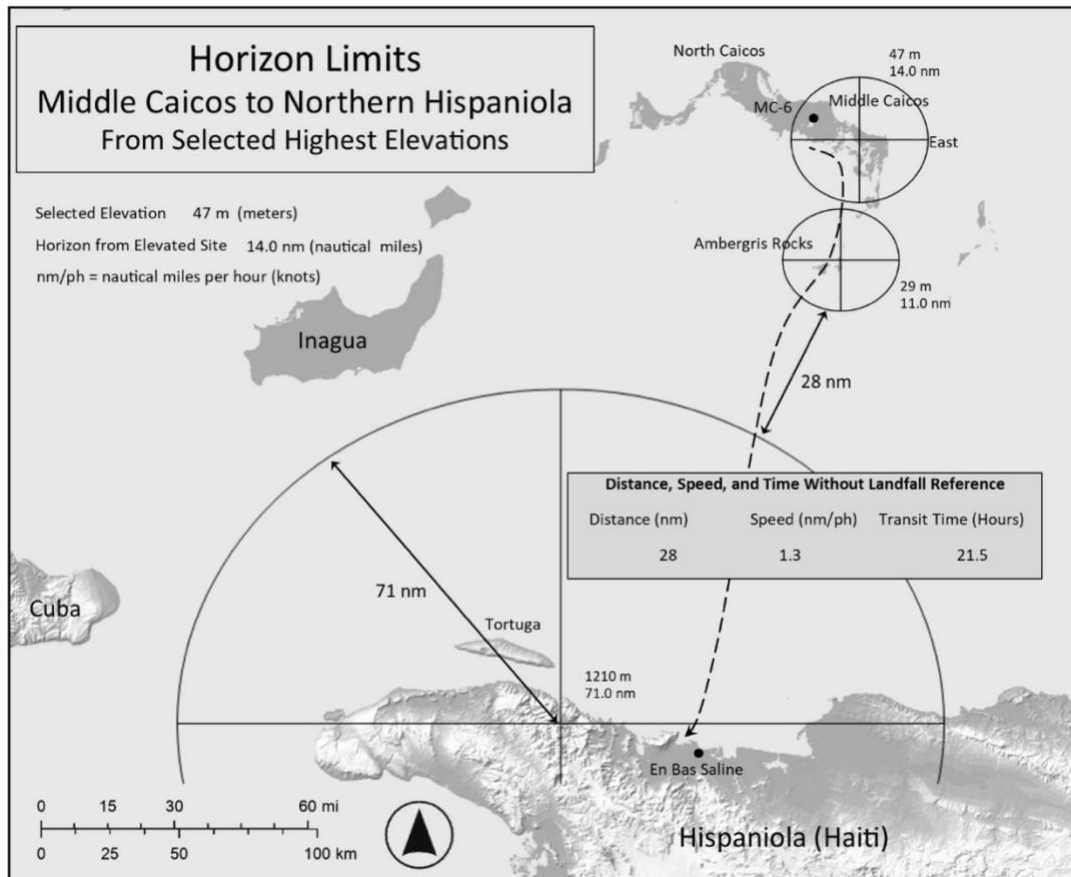


Figure 7. Horizon Limits: Middle Caicos to Northern Hispaniola

The Middle Caicos served as a midway point of interisland communication between the Bahamas and Hispaniola. While the distance between the two points is just over 120 nautical miles (222 km), canoe paddlers coming from the Middle Caicos remained without land reference sightings for only twenty-eight nautical miles (52 km), or approximately twenty-one hours.

## Tribute and Raiding Parties

The well-structured political system in place throughout the circum-Caribbean involved “multi-village territorial chiefdoms governed by a paramount chief [cacique], under whose control were districts and villages governed by a hierarchy of subordinate chiefs” (Hoogland and Hofman 1999, 94). Under existing tribal traditions, the position of cacique held hereditary credentials that they passed on, depending on long-held customs or those imposed by higher-level chiefs. Peter Siegel (1999) noted that tribal traditions included “status hierarchies” that were “emplaced and control over labor and tribute were well

established” (Siegel 1999, 221). He wrote that the Taíno economy, in the Greater Antilles and presumably on the Bahamian Islands, existed as a premarket economy with a focus on the exchange of goods for purposes of tribute and barter (Siegel 1999, 225).<sup>30</sup> Irving Rouse believed that village caciques organized much or all the adult labor for growing plants, hunting for land animals, gathering berries and nuts, and fishing in local rivers or the ocean. Using a communal system of distribution, the cacique distributed food and other items. The regional cacique then held control over “subchiefs” and “village headmen,” having the ability to collect items from any geographic area under their control. However, some researchers have debated the idea of a formalized system of ongoing tribute (Wilson 1990, 32).<sup>31</sup> Although more recent contributions have supported the idea of a well-organized political system with tribute as an assumed tradition, it was especially prevalent on the larger islands, such as Cuba and Hispaniola. Roberto Rojas (2016) noted, “We can assume the existence of a certain level of centralization of power and of subordination among chiefs” (Rojas 2016, 189).<sup>32</sup>

Despite these findings, interisland tribute is not well documented. One example of such practice most likely occurred during the October 15, 1492, episode noted earlier in this paper, where Columbus intercepted a Lucayan from San Salvador as the indigenous paddler made his way to Long Island (Fernandina). One or more of the products the Lucayan carried in his canoe may have been a tribute offering for a ruling cacique.<sup>33</sup> There were several large villages on Long Island and an unusually large cemetery. On October 16, Columbus wrote that the people of this island appeared “somewhat more civilized, showing themselves more subtle in their dealings with us, bartering their cotton and other articles with more profit than the others had experienced” (Kettell 1827, 47). One reason for the possible tribute may have been for protection from raiding parties arriving from other islands.

On the topic of pre-Columbian indigenous raiding practices, it is interesting that Columbus noted during his initial close interactions with Lucayans in San Salvador that several of the men displayed significant body scarring, which he attributed to a military encounter or combat. After observing the Lucayans using hand and arm gestures and pointing out to sea, he assumed that enemy raiders “from other islands nearby came . . .

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<sup>30</sup> Siegel also adds reciprocity as a key reason for the contact and exchange.

<sup>31</sup> Some scholars believe that the tribute system operated on an informal structure and timeline. See Roberto Cassá, *Los Taínos de la Española*. Dominican Republic, Editora de la Universidad Autónoma de Santo Domingo, 1974, 123; and Veloz Maggiolo, *Arqueología prehistórica de Santo Domingo*, McGraw-Hill Far Eastern Publishers, 1972, 235.

<sup>32</sup> Rojas noted the documentation by Bartolomé de las Casas, mentioning the rule of Camaguey. See Las Casas (1875, 25, 33).

<sup>33</sup> Columbus noted that the “lump of red earth, which was powdered and kneaded, and some of the dry leaves, which are much valued . . . they brought some to me on San Salvador” (Fuson 1992, 82). Also see Morison (1942, 241–242).

and tried to take them” as captives (Dunn and Kelley 1989, 77).<sup>34</sup> Upon taking captives of his own from San Salvador to act as guides and interpreters, Columbus soon found two of his Lucayan guides jumping ship on Rum Cay, a definite indication that the two men did not want to venture any further from their home island. The other five Lucayans later revealed their anxiety as the Spanish fleet approached the major island of Hispaniola, with Columbus writing, “They [Lucayans] had the greatest fear in the world of the people of that island” (Dunn and Kelley 1989, 207).<sup>35</sup>

Later, in Cuba and Hispaniola, Columbus would learn of the Carib peoples (Kalinago), when Spanish observations and indigenous descriptions led him to believe that the Carib culture included cannibalism and sodomy. At first, he did not accept the stories told by indigenous peoples of Cuba and Hispaniola of regular attacks from Carib raiding parties, sea-based incursions coming from the southeast and northwest. As more evidence appeared during his first and second voyages, Columbus and the Spanish settlers changed their minds and formulated a social and political attitude condemning Carib behavior based on Christian tradition, justifying their right to initiate indigenous enslavement.

From Columbus’s logbook dated December 11, 1492, Bartolomé de las Casas summarized Columbus’s comments about the ongoing, oppressive fear that *Indios* (indigenous peoples) held, fearing raiders from other islands. The account reads:

They [Columbus’s captive Lucayan guides] told him [gestures and Arawakan words] that it was a very large island with big mountains and rivers and valleys. And they said that the island of *Bohio* was larger than *Juana*, which they call Cuba, and that it is not surrounded by water. And they appear to mean that here behind this Hispaniola, which they call *Caritaba*, there is a landmass of exceedingly large size. And perhaps they are right, for they may be oppressed by cunning people, because the people of all these islands live in great fear of those from *Caniba*. (Dunn and Kelley 1989, 217)

The above passage is quite telling and goes on to describe how “terrible men” from the Grand Khan (mainland) came to their island to capture islanders and take them away. The indigenous interpreters insisted that their people never saw those prisoners again. This sounds like a well-organized indigenous system of slavery, maintained by people coming from a “mainland area,” with Columbus’s guides providing a detailed elucidation of circum-Caribbean geography. The term “all of these islands” either indicates Las

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<sup>34</sup> Keegan (2015, 2) challenges this view, believing that “warfare was actually an element of native exchange relations between islands.”

<sup>35</sup> Berman and Hutcheson (2000, 113) believed that the remaining Lucayans may not have understood or believed Columbus when the latter promised to return all of them to San Salvador upon his return trip to the Indies.

Casas's interpretation of what Columbus had experienced up to that point or that the Admiral's indigenous guides sustained comprehensive interisland contact within their regional understanding.

The Lucayans of the Bahamas and the Taíno of the Greater Antilles constructed tribute-based political chiefdoms, resulting in regional alliances formed for mutual security. The cacique of a small clan offered gifts as a form of tribute to the leader of a larger clan. As argued by Berman and others, the accumulation of physical possessions enhanced the power and prestige of local caciques, and its redistribution to nonlocal regions helped to "legitimize and aggrandize the position" (Berman and Hutcheson 2000, 127). Typical items given in tribute included salt, beads, brightly colored feathers, large or unique seashells, and carved implements. This small-to-large village exchange is archaeologically based on the demographic reality analyzed throughout the circum-Caribbean.<sup>36</sup> The Spanish understanding of a cacique's territorially controlled region became known as a *cacicazgo*; a limited *cacicazgo* might extend to physically adjacent villages, all on the same island. However, interisland *cacicazgos* existed and were referenced by Columbus when the Lucayans "spoke of a 'king' who lived on one of the islands to the south of San Salvador" (Berman and Hutcheson 2000, 127). The Spanish chronicler Peter Martyr of Angleria noted that on Columbus's second voyage, a shore party from the fleet, while looking for the powerful cacique that had formed a bond of friendship with Columbus during the first voyage, encountered an armed group of Taíno. In the ensuing exchange of gestures, a Spaniard spoke the name of the cacique they were looking for, Guacanagari; the Taíno motioned that Guacanagari had moved from his coastal village to a mountain location and that the land now belonged to a new cacique (Eatough 1998, 9).

Did a trading/tribute system evolve between Cuba and the Maya civilization sometime after the initial migration period from Mesoamerica, which according to Rouse, commenced around 5,000 BC (Lithic Age)? Lynne Guitar et al. (2013) add that these migrations originated from Central America and may have extended eastward from Cuba to Hispaniola (Guitar et al. 2013, 1014).<sup>37</sup> Keegan sees a second wave of migration into Cuba beginning around 3000 BC (Archaic Age) from South America and spreading north through the Antilles, then on to Hispaniola and Cuba; he acknowledges however, that interactions between the Lithic Age migrants and the later inhabitants "are not well defined" (Keegan 2007, 55–56).<sup>38</sup> Estrada-Belli (2010) argues that during the Pre-Classic (2000 BC to AD 250), tribute became a basic element of postconquest expansion throughout Mayan city-state development, initiating political and economic connections

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<sup>36</sup> As noted by Berman and Hutcheson (2000, 421), tribute was presented by the Lucayan and Taíno villages to "paramount chiefs of Hispaniola and eastern Cuba."

<sup>37</sup> The researchers suggest trade relations between Guanahatabey settlers on Hispaniola and other migrants canoeing northward along the Antillean Island chain, eventually settling in eastern Hispaniola.

<sup>38</sup> Keegan is adamant that the Guanahatabeys did occupy most of western Cuba and originated from the Belize and/or Central America homelands.

from distant locations (Estrada-Belli 2010, 22).<sup>39</sup> Robert Sharer draws together these connections when he writes: “Networks of trade and social interaction, even collections of tribute and open warfare, stimulated growth” (Sharer and Taxler 2006, 19).<sup>40</sup> Sharer notes that initial social interactions between regions could lead to “goods and services being exchanged and [later] tribute extracted from one polity to another” (Sharer and Taxler 2006, 139). This may have occurred in the case of Mayan contact with western Cuba.

If Sharer is correct, then early trade connections between Mesoamerica and Cuba encouraged more trade, with the more advanced civilization eventually transforming trade into a virtual tribute. Ronald Canter (2006) implies this approach when he states, “a small but steadily accumulating body of evidence suggests direct, though sporadic, trade between the Maya in Yucatan and the Taino in Cuba” (Canter 2006, Abstract). Canter cites items such as beeswax found in eastern Cuba, beekeeping being native to the Maya, citing Bartolomé de las Casas, who speculated that it came to Cuba by way of a Mayan trading canoe. Coming from the opposite direction, archaeologists have discovered a Taino vomit ladle in Belize, a Classic Period city named Altun Ha (Canter 2006, Abstract).<sup>41</sup>

Luis Martínez-Fernández (2018) believes that each successive wave of pre-Classic migration from Yucatan to Cuba brought a “higher technology level” to the island. Most of these early habitation sites appear to have been in western Cuba along the northern and southern shorelines. Archaeologists have identified one subgroup of these people as Guayabo Blanco. These early migrants used sophisticated tools made by “grinding rather than flaking and they made cutting tools out of conch shells, also constructing dugout canoes and fishing nets.” Martínez-Fernández noted how these people buried their dead, sometimes along an east-west axis, that their “intricate cave paintings . . . suggest sophisticated cosmological knowledge,” adding, “Some of these pictographs consist of concentric circles that are interpreted as highly accurate solar calendars marking the solstice” (Martínez-Fernández 2018, 23–36). Data collected on selected Mesoamerican burial sites agree with the east-to-west orientation, particularly for cities such as Altun Ha and Mountain Cow (Belize) and Copan (Honduras).<sup>42</sup> Interpreting the above-stated findings, Martínez-Fernández declares: “It is possible that they were created by or learned

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<sup>39</sup> Estrada-Belli noted an example, the Late Preclassic Maya city of Kaminaljuyú that received tribute from “large sections of the Guatemala Highlands and Pacific slope.” For more examples and the connections between warfare, tribute, and trade, see pages 2, 44, 52, 122, 127, and 139.

<sup>40</sup> For more on the connections of Mayan warfare and tribute, see pages 36, 51, 58, 78, and 137.

<sup>41</sup> Vomit ladles are also known as vomit spatulas.

<sup>42</sup> Welsh (1987, 94–108). Regional differences within the Maya empire realized two major head orientations of burial tradition, east and north. Interestingly, the burial sites farther inland contained burial head orientations aligned predominately to the north, while coastal or near-coastal village sites had prevailing head orientations toward the east.

from people who belonged to advanced Central American civilizations.” The Guanahatabeys lived in western Cuba at the time Columbus came there in 1492, although there is conflicting information regarding their ancestry and connection to the Guayabo Blanco.<sup>43</sup>

Heather McKillop (2010), however, argues that the Maya were “proficient canoeists for travel and trade” during the Classic Period (AD 300–900), adding that political power was “mediated by movement of people and goods” (McKillop 2010, 94). Some of these goods, such as jade, pottery, cotton, obsidian, cacao, and salt, could have served as tribute from neighboring areas such as western and central Cuba. For example, the jade mines of Guatemala provided a rich source for Mayan craftworkers to make jewelry and weapons. Yet recent geologic discoveries have confirmed a jadeite jade deposit in central Cuba and a large formation in the area of Sierra del Convento of eastern Cuba, raising the question of whether the island was ever a source for jade trading and tribute (García-Casco et al. 2009).<sup>44</sup> Michael D. Coe and Stephen Houston (2005), in their book *The Maya* discuss how green jade was obtained as part of a combined trade and possible tribute system for outlying territories, referencing the Río Motagua in the western highlands of Guatemala, appearing as “pebbles and boulders in the river deposits” (Coe and Houston 2005, 23).<sup>45</sup> Tribute for the Classic Maya remained a bedrock of military and political conquest and tradition, such as it did with the K’iche ethnic group living in Guatemala, where they “collected tribute” from people living in neighboring regions, using their temples as storage and redistribution centers (Lucero 2007, 410). The idea of “tribute networks” served as a function of Maya expansion, and “disruptions in trade and tribute networks” may have been partly responsible for the decline in powerful city-states (Aimers 2007, 335).<sup>46</sup>

Archaeologist William Folan et al. (2016) explained how the maritime exchange networks changed significantly in the post-Classic period with an emphasis on “bulk items via

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<sup>43</sup> For more information on migration and ongoing contact between Yucatan and the Greater Antilles, including Cuba, see Wilson et al. 1998. See Rouse (1992, 5–6, 24–25) for origins and placement of the Guanahatabey people.

<sup>44</sup> The authors readily admit that the new find at Sierra del Convento, Cuba, “opens new archaeological perspectives for the source of pre-Columbian jade artifacts found in the Antilles” (2). See Harlow et al. (2006) for more information on the impact of this discovery. Harlow GE, Murphy AR, Hozjan DJ, De Mille CN, Levinson AA (2006), “Pre-Columbian jadeite axes from Antigua, West Indies: description and possible sources” *Can Mineral* 44, 305–321. doi:10.2113/gscanmin.44.2.305

<sup>45</sup> Coe and Houston (2005) mentioned how “the Maya elite had their special needs, above all jade, quetzal feathers, and marine shells.” For more on the importance of the Motagua Valley production of Mayan goods, see Erick T. Rochette, “Jade in Full: Prehispanic Domestic Production of Wealth Goods in the Middle Motagua Valley, Guatemala,” Vol. 19, Issue 1, *Special Issue: Housework: Craft Production and Domestic Economy in Ancient Mesoamerica*, Archaeological Papers of the American Anthropological Association, 2009.

<sup>46</sup> Aimers maintained the river and coastal trade remained active, surviving “the changes of the Late Classic Period (AD 600–900).”

maritime trade routes,” due to “radical changes in the geopolitical landscape following the depopulation of the Classic-period city-states” (Folan et al. 2016, 295).<sup>47</sup> They argue that this post-Classic movement to “the coast included a major reorientation of trade routes,” seeing this period as an expansion in “pan-Mesoamerican” trade and contact, undermining the economic and political power of inland city-states. An example of this trade can be seen in the use of the word *yuca*. The derivation of the term *yuca* used by indigenous people of eastern Yucatan was not part of the Mayan language heritage, as noted by the authors. Rather, it is a phrase described by Bernal Díaz (1632) used to describe the cassava plant in Cuba and Jamaica, indicating pre-Columbian trade connections (Folan et al. 2016, 311).<sup>48</sup>

Columbus, in his first voyage journal, noted on at least two occasions the large and well-developed ocean-going Cuban indigenous canoes. In the first instance, on November 27, 1492, he “found a handsome dugout or canoe, made of one timber as big as a *fusta* [large European rowboat] of twelve rowing benches drawn up under a shelter or shed of wood and covered with big palm leaves.” Three days later, Columbus came in close to the Cuban shoreline and saw another large canoe, estimating that he could accommodate over one hundred rowers and/or passengers (Fitzpatrick 2013, 115).<sup>49</sup>

Canoe voyages between the Yucatan Peninsula and Cuba were entirely feasible. Figure 8 maps a prospective route across the Yucatan Channel to destinations on the southern coast of western Cuba. McKillop pointed to evidence that suggests “sea travel and trade” activity in and around the Moho Cay Islands (Belize); the site, located at the mouth of the Belize River, remained active from the late Preclassical through Postclassic periods, achieving trading and tribute access via inland areas and Caribbean coastal locations north and south. Voyages north included stops at the Mayan ports of Tulum (Quintana Roo) and Cancún, as well as near-coastal communities such as Tantun Cuzamil (San Gervasio, Cozumel). All these sites are well situated for a short journey to western Cuba and were active in sea trade.<sup>50</sup> Jeremy A. Sabloff and William Rathje (1975) recognized how Tulum and Cozumel served as “important midway point[s] for the maritime merchants who traded in salt, cloth, jadeite, feathers, obsidian, and copper” (Sabloff and Rathje 1975, 75).<sup>51</sup>

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<sup>47</sup> This phenomenon was particularly true for the southern and central Maya lowlands.

<sup>48</sup> The authors suggest that the name Yucatan was not the name that the Maya used to describe their territory. The yuca plant (cassava) is believed to have originated in the Yucatan Peninsula and traded to Caribbean islands.

<sup>49</sup> Fitzpatrick believed the “over one hundred” to be too high, quoting Peck (2002) that most Cuban canoes held up to thirty persons.

<sup>50</sup> The northern coast of Cuba also experienced a high degree of pre-Columbian Indigenous intercoastal contact. See Cooper (2010, 124).

<sup>51</sup> The reference here is “midway,” meaning between the Belize and northern Yucatan coastal regions, not Cuba.

Initially riding favorable winds and surface currents, Maya paddlers soon encountered a significant northerly drift, forcing them to cut across the current in an east to northeast direction. Midway through the Yucatan Channel, they turned north-northeast and held that course until they picked up a 1,939-foot-tall (591 m) topographic peak in western Cuba, guiding them to the southern coastal town at Playa Bailén, the cross-channel voyage lasting approximately 50 hours.<sup>52</sup> Marshall Bassford McKusick (1960), an anthropologist, noted “convincing” evidence that Maya canoeists of the Yucatan Peninsula and Central America utilized more “highly developed” canoes, some with sails, with the possibility of helping to increase cross-channel speed and decrease voyage duration (McKusick 1960, 9).<sup>53</sup>

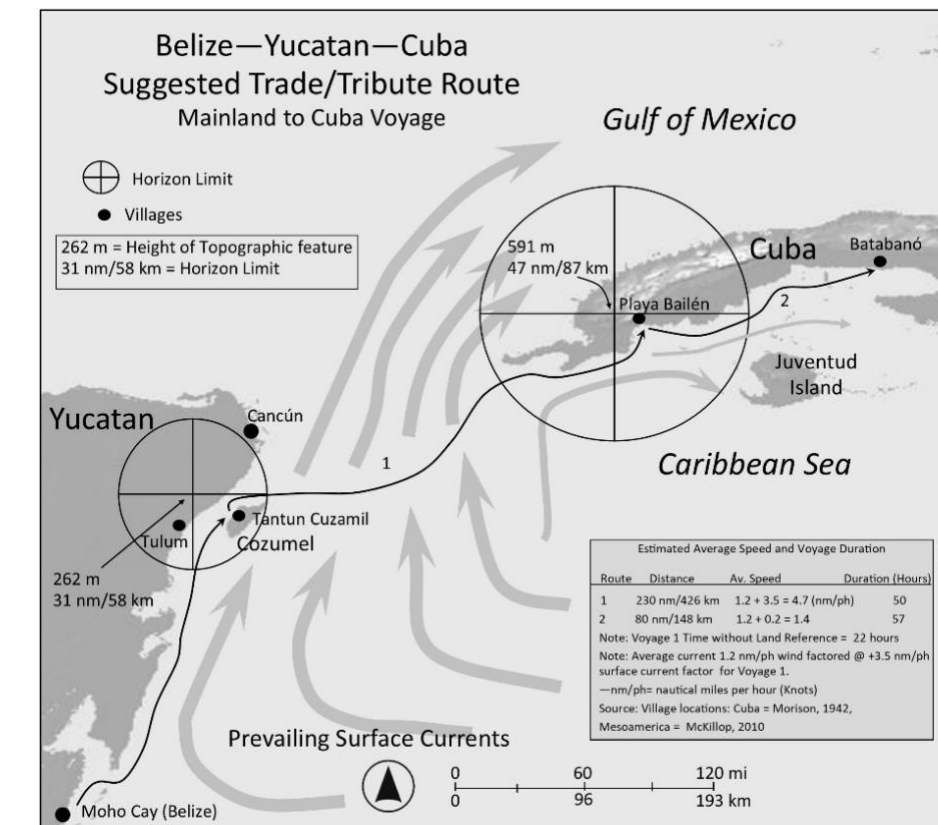


Figure 8. Belize—Yucatan—Cuba

The Belize to Tulum and Cozumel, and then on to Cuba was an achievable voyage, lasting just over two days of canoeing for each leg of the trip. The suggested return route is not shown but would involve a southerly course from Playa Bailén, then westward to utilize winds and currents.

<sup>52</sup> This figure incorporates rest periods and slowdowns due to paddling fatigue, configuring for a crew of between two and six paddlers.

<sup>53</sup> The author also noted how the “Island-Caribs” by 1650 adopted versions of sails for their canoes after Spanish ships.

## Social Connectedness

García Ar'valo (1991), supported by Siegel, suggests that Caribbean ceremonial ball courts and plazas served as economic and political centers of interregional exchange. Siegel noted that ball courts involved using a physical space known as a *batey*; indigenous tribes also used the term to describe the gameplay as a physical, ceremonial encounter between two teams. Described well in the early Spanish contact period by Las Casas and Gonzalo Fernández de Oviedo, the game involved moving the ball around the court by throwing and hitting it with parts of the body, a game similar in some ways to a game then played in Italy.<sup>54</sup> A ball player could use any part of the body except the hands with the object to keep the rubber-type ball bouncing; a team lost points if the ball rolled on the ground or stopped (Morse 2024, 447).

Ricardo Alegria (1951) wrote for *American Antiquity* that “games of ball were played and ceremonies with a socio-religious significance were celebrated, which were to be found in each village” (Alegria 1951, 348). He argues how a social bond formed between members of different communities, all of whom participated in or witnessed ball games or religious observances. Siegel emphasized this multivillage experience, believing that the evolution of the *batey* expanded as the village gained additional regional political power, begging the question: Did this include indigenous communities from other islands, then under extraisland political hegemony? Using Siegel’s theory of political expansion, archaeologically evident in ever larger and more elaborate ball courts, the opportunity for interisland social connections becomes apparent. Another geographic interpretation of this phenomenon includes the density of villages, particularly those regions containing the largest ball courts, assuming these to be of prime political and economic importance to intraregional villagers and extra-island visitors. One possible geographic connection we have already discussed and mapped exists between Puerto Rico and Hispaniola, more precisely between villages on the eastern shoreline of Hispaniola, which contain the largest ball courts and ceremonial plazas in Puerto Rico (see Fig. 9).

Three sites in Puerto Rico stand out from all other locations due to their extensive, delimited, and formally arranged grounds. Caguana is by far the largest, spreading out to 5,200 square meters (56,000 square feet).<sup>55</sup> At 4,239 square meters (45,628 square feet) is Palo Hincado, and in third place is Tierras Nuevas at 2,472 square meters (26,608 square feet). All three villages thrived during Period IV (AD 1200–1500).<sup>56</sup> Another

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<sup>54</sup> See Alegria (1951).

<sup>55</sup> Officials have registered the Caguana Ceremonial Ball Courts Site as one of the most important pre-Columbian sites in the West Indies, recognized in the U.S. National Register of Historic Places, containing thirteen ball courts and ceremonial open spaces (*bateyes*).

<sup>56</sup> Period IV is the latter stage of the Ostionoid series (AD 600–1500). See Rouse (1952, 330–333). See Siegel (1999, 226) for a list of documented ball courts and ceremonial plazas in Puerto Rico.

possible indigenous site for interisland ceremonial contact may have been Delfin del Yaguez, just inland from the modern city of Mayaguez, approximately five miles from the coast, easily reached via a canoe up the Río Yaguez. The ball court and plaza locations stretch out to 1,292 square meters (13,906 square feet).<sup>57</sup>

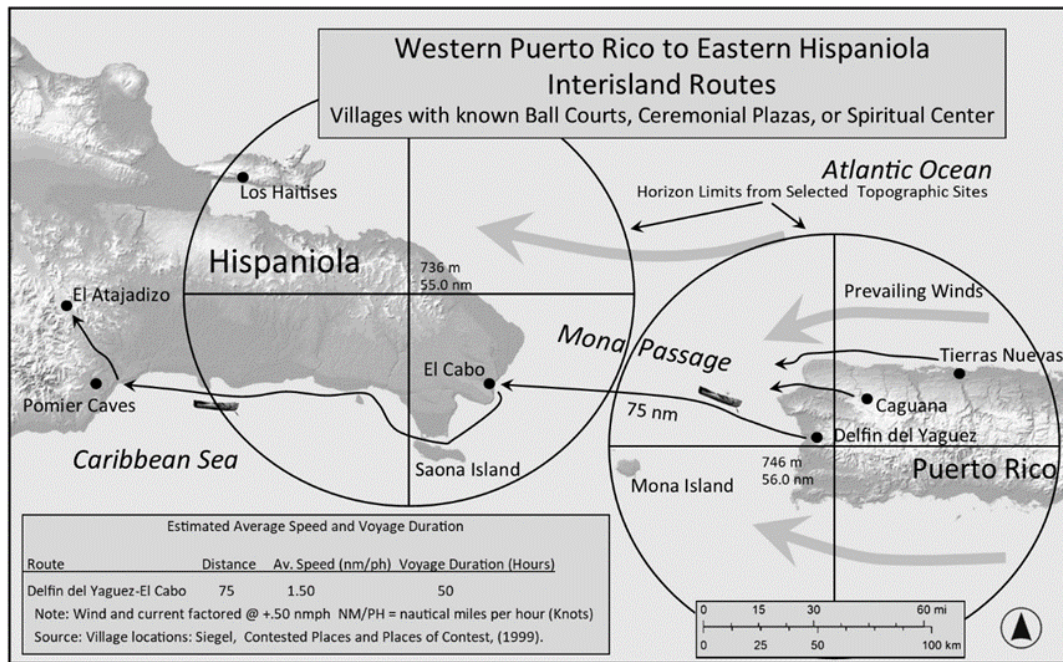


Figure 9. Western Puerto Rico to Eastern Hispaniola

A canoe paddler leaving either shoreline, Puerto Rico or Hispaniola, will experience a short, two-to-three-nautical mile stretch of nonhorizon visibility, otherwise able to sight and plot course changes easily. Data indicates that a voyage from Puerto Rico to Hispaniola involved a voyage of 2.5 days.

Sitting across the Mona Passage from the large village at Delfin del Yaguez, Puerto Rico, is the large village site at El Atajadizo, off the Yuma River in southeastern Hispaniola. Two different settlement patterns at the latter location indicate cultural practices akin to those at Delfin del Yaguez. The earlier village indicated seasonal occupation with large, thatched huts housing extended families, built on the large, level acreage at the site. The second habitation consisted of smaller individual nuclear family huts concentrically situated around a large flat ceremonial plaza; in fact, there is more than one plaza on site. The second phase of settlement then represents a “cessation of semi-nomadism” and a commitment to permanent migration settlement based on sufficient exploitation of the regional environment and political and social consolidation of regional power and

<sup>57</sup> This area today is the Batey Delfin del Yaguez Archaeological Park. The well-defined ball-playing area, rock-framed, provides a good sense of the size and layout of a large indigenous ceremonial center.

influence (Samson 2010, 64).<sup>58</sup> In this manner, initial interisland trade connections may have evolved into an ongoing social linkage between the two villages.

Archaeologists suspect another site in this region, El Cabo, engaged in continual interisland visits; the village is in the far-southeastern coastal region of Hispaniola, approximately ten miles east of El Atajadizo. Recent archaeological research suggests that Taíno pottery makers derived some of their clay from the “central northwest coast of Puerto Rico” (Casale et al. 2022, 12). The team of scholars discussed the high degree of suspected networking and sharing of goods and knowledge between villagers living on both sides of the Mona Passage, noting, “a high rate of connectivity between Hispaniola and Puerto Rico,” concluding that “periodic visits to each other’s communities . . . may be one explanation for the sharing, stability, and persistence of manufacturing knowledge through time and space” (Casale et al. 2022, 14). At the time of this writing, there is no evidence of a formal ball court, but a burial ground has been excavated. These areas have been known to exist near ceremonial and ball court locations. In 2007, excavation uncovered a large plateau area near habitation structures with an incomparable view of the sea. Results uncovered pre-Columbian evidence of ground stone beads and Spanish contact material such as glass beads and white-glazed ceramics (Hoogland and Hofman 2007). However, there is a possibility that a portion of level ground in the northern section of the village “may have been more easily leveled and is a more suitable area for a plaza” (Samson 2010, 298).<sup>59</sup> Archaeologists continue to search and note: “This does not mean that there was no central gathering place in the *yucayeque*, just that this was either not demarcated and has not yet been located” (Samson 2010, 298).<sup>60</sup> *Yucayeque* is a Taíno term used to describe an indigenous village or settlement area.

Social gatherings also occurred at caves throughout the Bahamas. These caves served as cemeteries, containing human remains, “pictographs, petroglyphs, faunal bone, botanical remains, and a variety of cultural material” (Carr et al. 2012, 285). Interestingly, archaeologists have unearthed canoes in or near at least two caves in the Bahamas, suggesting that they served as burial vessels or that visitors from other islands left the canoes. In one case, researchers found several human skeletal remains adjacent to a canoe (Carr et al. 2012, 286–287).<sup>61</sup> In at least one well-known Taíno myth, “Derminan and the

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<sup>58</sup> For more information on the indigenous site at El Atajadizo, see Veloz Maggiolo, M., Ortega, E., and Sanoja, M., *Preliminary Report on Archaeological Investigations at El Atajadizo, Dominican Republic*, in *Proceedings of the Sixth International Congress for the Study of Pre-Columbian Cultures of the Lesser Antilles*, 1976, 283–294.

<sup>59</sup> Samson admits that plazas in Hispaniola were “comparatively rare,” except for the eastern regions, those areas closest to Puerto Rico.

<sup>60</sup> The reason for this optimism centers on the fact that many other village sites in eastern Hispaniola do contain a formal ceremonial plaza. See Samson (2010, 42) for a derivative summary of this term.

<sup>61</sup> Carr et al. believe that much of the material found in these caves relates to cosmological beliefs and tribute. One set of human remains contains an individual with bound hands, suggesting “that this person

Great Flood,” canoes served as the sea vessel that carried four brothers on an extended journey to “faraway shores. It is during this canoe trip that the four brothers learn the cultural norms of their society” (Martin 1999, 74).

## **Conclusion**

The evidence discussed and mapped in this study points to ongoing trade relationships, travel patterns, and migratory movements by and among indigenous people across most every part of the circum-Caribbean, both pre- and post-1492. The proximity of islands to each other and the mainlands, along with sufficient extended zones of horizon identification, provided travelers with relatively short nonhorizon navigational challenges, under ten hours for many of the Caribbean islands, encouraging the interisland system of travel to continue and expand. Indigenous villagers establishing canoe routes between the Caribbean islands and continental mainland areas remained within relatively short geographic horizon limits, except when considering coastal areas away from the nearest points of contact. Pre-Columbian canoe voyages from mainland areas such as Yucatan and Florida to Cuba averaged twenty to thirty hours, respectfully, with no land reference visibility, requiring paddlers to use dead reckoning skills or celestial navigation techniques, increasing the navigational challenges, yet certainly within the capabilities of experienced canoe voyagers. Routes selected may have employed geographic peaks as departure and destination points of reference as it minimized navigational concerns.

Further research invites voyages in a watercraft to bear first-hand witness to the routes, channels, currents, wind, and topographic features identified herein. In addition, it would be helpful to identify and map home locations for known trade products per selected subregions of the circum-Caribbean: the Bahamas, the Greater Antilles, the Lesser Antilles, the northern coast of South America, Mesoamerica, and Florida, providing a comprehensive view of pre-Columbian origination sites of trade and exchange.

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was an unwilling participant, possibly a nonlocal (from another island) who may have been captured”(2012, 291).

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