

The Ancient Maya of the Caribbean Coast: A View from Wild Cane Cay, Belize

The Caribbean Sea was important to the ancient Maya as a source of marine resources, as a trade route for goods and resources from nearby and distant lands, and as a place to live (Fig. 1).

There is evidence of coastal settlement from the Middle Preclassic (600–300 BCE) to the time of the arrival of Spaniards in the sixteenth century (Andrews 1983; Eaton 1978; McKillop and Robertson 2019). The coastal Maya exploited marine resources for food, for ritual paraphernalia, and for utilitarian purposes. The inland Maya acquired marine resources as early as the Middle Preclassic period (Powis et al. 2009). Lange (1971) suggested that seafood provided a dietary alternative for the Classic Maya. Other researchers have documented salting fish, surplus production of fish, and fish processing at coastal sites intended for inland trade (Graham 1994; Masson 2004; McKillop and Aoyama 2018). Marine fish bones are present in the archaeological remains at various inland sites, notably Dzibilchaltun, Altun Ha, Lubaantun, and Tikal (McKillop 2007).

The sea was a transportation highway for ancient Maya mariners knowledgeable about winds, tides, shoals, and weather (McKillop 2010, 2017). Boat travel expanded marine

resource exploitation beyond the shoreline, allowed settlement of offshore islands, and connected communities along the coast and inland via rivers. With the rise and expansion of the city-states in the southern Maya lowlands of Guatemala, Belize, and Mexico during the Classic Period (300–900 CE), there was a concomitant rise and expansion of trade between nearby coasts and inland cities and other communities. Salt, a basic biological necessity that was scarce at inland sites, was traded from nearby coasts (McKillop 2019). Classic period coastal communities provided inland communities with other marine resources as well as resources transported along the Caribbean from farther away, including obsidian and chert stone tools, pottery, and jadeite objects (Hammond 1972; McKillop and Sills 2023; McKillop and Aoyama 2018). With the abandonment of most inland communities in the southern Maya lowlands at the end of the Classic period, c. 900 CE, some coastal Maya communities such as Isla Cerritos (Andrews et al. 1989), Santa Rita Corozal (Chase 1981), Moho Cay (McKillop 2004), Marco Gonzalez (Graham and Pendergast 1989), and Wild Cane Cay (McKillop 2005a) endured. Trade along the Caribbean expanded, with new contacts in diverse and distant locations (Turner and Sabloff

2012). Water transport facilitated bulk transport of goods and resources. The greater ease of water transportation, compared to overland transport using human porters, meant that the ancient Maya could transport material farther by sea than by land.

Most Maya archaeologists agree that at least by the Late Classic period and throughout the Postclassic, the Maya economy was based on tribute to support the dynastic Maya royalty and marketplaces where surplus goods were traded (King 2015; Chase et al. 2015; Masson and

Freidel 2012). Pictorial scenes painted on pottery vessels and carved on stone monuments at inland cities document tribute payment in the form of sacks of cacao beans, stacks of woven cotton, and other goods (Baron 2018). Tribute, along with labor tax, supported the Maya royalty and the construction and maintenance of temples, palaces, and other construction at Maya cities.

The common Maya produced surplus goods and resources that they exchanged with other households in their community (Chase et al. 2015; Sheets et al. 2015). They sold their goods and resources at marketplaces within large cities such as Caracol (Chase et al. 2015) and at regional markets for smaller communities such as Ceren (Sheets et al. 2015). In return, these producer-vendors acquired other goods, including obsidian, serving vessels, and other everyday and ritual goods. Cacao beans, standard units of woven cotton cloth, seashells, and other items such as standard units of hardened salt (McKillop 2021) were used as currency in the Classic period markets (Masson and Freidel 2012).

There are contrasting models for the role of coastal trading ports in the Maya economy throughout prehistory, but particularly in the Terminal Classic (800–1000 CE). Hammond (1976) presented a model of obsidian trade from the Maya highlands to the lowlands in which El Chayal source obsidian was transported via inland routes whereas Ixtepeque obsidian was traded along the Caribbean coast and then inland via rivers to the southern Maya lowland cities. Healy et al. (1984) and McKillop et al. (1988) suggested that obsidian from both sources was transported along the Caribbean coast but that El Chayal was the dominant source used in the Classic period and Ixtepeque during the Terminal and Postclassic periods. Hammond (1976) suggested that offshore trading ports were used as transshipment stations between maritime and riverine routes. This model was adopted by

Fig. 1. Map of the Maya area and the Belize Barrier Reef. Courtesy Mary Lee Eggart.



various researchers (Andrews et al. 1989; Cobos 2023; Guderjan and Garber 1995; Graham and Pendergast 1989; McKillop 2004, 2005a).

Cobos (2023) asserts that after the abandonment of inland cities in the southern Maya lowlands at the end of the Classic period, the northern Yucatecan city of Chichen Itza developed a redistributive economy based on tribute and controlled trading ports around the Yucatán Peninsula of Mexico and Belize. Cobos's view resembles the "port of trade" model advanced by Chapman (1957), in which there was elite-administered long-distance sea trade around the Yucatán via ports as part of a redistributive economy. The southernmost link in Cobos's (2023) trade network is Wild Cane Cay, an offshore island in southern Belize. Wild Cane Cay and the nearby Paynes Creek Salt Works in Punta Ycacos Lagoon illustrate the changing patterns of coastal settlement and trade in the Maya area (Fig. 1). In the Classic period, the island trading port of Wild Cane Cay was integrated into a regional network of trade between the coast and inland communities. The inland trade was anchored by the dietary need for salt, produced on the coast but absent inland where this basic dietary necessity was in demand. The pattern of coastal-inland trade was replicated along the Caribbean coast of Belize and the Yucatán. Abandonment of inland settlements at the end of the Classic period did not end coastal settlement. Evidence presented in this paper illustrates that Wild Cane Cay was as an independent trading port integrated into a regional marketplace economy and not a node on a redistribution/tribute route controlled by Chichen Itza.

The Environmental Setting

Wild Cane Cay is a ten-acre island located in the mouth of the Deep River in southern Belize (Fig. 2). The island is the northernmost island at the juncture of two lines of cays in the Port Honduras, a coastal bight into which several

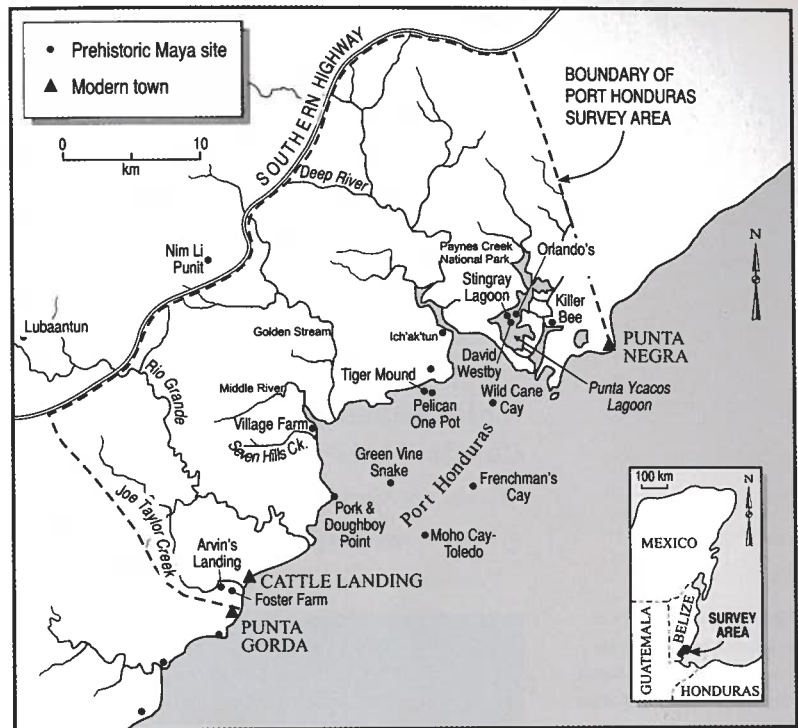


Fig. 2. Map of southern Belize, with coastal Maya sites. Courtesy Mary Lee Eggart.

navigable rivers flow into the Caribbean. These rivers provide access to inland Maya cities of the Classic period, including Lubaantun, Uxbenka, and Nim Li Punit. Mangroves dominate the offshore islands and coast, which are uninhabited. However, archaeological survey in the Port Honduras revealed Maya sites under mangroves or underwater (McKillop 2005a). In fact, sea-level rise has submerged many coastal Maya sites along the Yucatán peninsula of Mexico and Belize, making them invisible in the modern landscape, either buried under mangroves or underwater (McKillop 2002, 2023).

Although the Port Honduras area of southern Belize is dominated by red mangroves and uninhabited, archaeological research indicates that there was extensive settlement on the coast and offshore islands in antiquity. Rising seas inundated most coastal sites, as documented by deposits of red mangrove peat (*Rhizophora mangle*) below the sea floor. The peat formed as red mangroves grew taller to keep their leaves

above water as a response to rising seas. In areas with ancient settlements, the submerged contexts provided conditions for unusual preservation of organic material. This includes wooden buildings preserved in mangrove peat below the sea floor in a shallow lagoon system that was the focus of the Paynes Creek Salt Works. This also includes anaerobic deposits at Wild Cane Cay that preserved plant food remains and fish bones.

Initial Settlement and Origins of Maya Coastal Trade

The ancient Maya settled on the Yucatán coast of Mexico and Belize from Preclassic through

Postclassic times (see Fig. 1). Coastal settlement in southern Belize began with communities focused on exploitation of marine resources, with limited external ties, in the Middle Preclassic through the Early Classic (300–600 CE). The earliest coastal site in the Port Honduras is Ich'ak'tun, a Middle to Late Preclassic shell midden site on a high ridge on the south side of the Deep River mouth (Fig. 2; McKillop and Robertson 2019). Although a small community, the inhabitants had pottery styles typical of sites in the southern Maya lowlands, indicating they were not isolated. The Ich'ak'tun Maya also imported obsidian from Ixtepeque in the Middle Preclassic, likely along the Caribbean coast trade route from the Motagua River, in contrast to the inland trade of El Chayal obsidian from the Maya highlands to inland sites such as Altar de Sacrificios.

Wild Cane Cay was first occupied in the Early Classic as a fishing village. The Maya there focused on tree cropping three species of native palm fruits (*Attalea cohune* [cohune palm], *Acrocomia aculeata* [coyol palm], and *Bactris major* [coconoboy]), cultivating fruits such as

Fig. 3. Modern Maya pole and thatch buildings from San Pedro Colombia, Belize. Photo by Heather McKillop.



Fig. 4. Wooden posts with sharpened ends from the Paynes Creek Salt Works, and snorkeling archaeologists at the Paynes Creek Salt Works. Photo by Heather McKillop.



mamey apple, hogplum, and avocado and catching estuarine and marine fishes (McKillop 1994, 1995, 1996a, 2005a). Abundant fish and other animal bones were excavated from household middens at Wild Cane Cay (McKillop 2005a). The unusual preservation of the plant food remains, fish bones, and other animal bones was due to their location in permanently waterlogged, anaerobic sediment below the water table in the excavations on the island.

The Maya on Wild Cane Cay lived in pole and thatch houses that decayed in the tropical landscape as at most other Maya sites, except at the nearby Paynes Creek Salt Works, where mangrove peat preserved wooden buildings below the sea floor (McKillop 2005b). According to Haviland (1985), who excavated domestic architecture at Tikal, most Maya buildings were constructed of pole and thatch as is the case in modern Maya communities (Fig. 3). The pole and thatch buildings were used as residences, kitchens, workshops, and for storage (Wauchope 1938).

Pole and thatch buildings on Wild Cane Cay likely resembled those on the shores of Punta Ycacos Lagoon at the nearby Paynes Creek Salt Works, where anaerobic conditions preserved the only Classic Maya wooden buildings (McKillop 2005b, 2019). When the Maya built pole and thatch structures along the shores of the lagoon to make salt, beginning in the Early Classic period (300–600 CE), they drove the building posts into the ground, which was mangrove peat. After the salt workers abandoned the sites in the Terminal Classic period (800–1000 CE), rising seas flooded the buildings, which decayed. The lower parts of wooden posts of buildings that were in the ground were preserved in the mangrove peat (Fig. 4). A total of 4,042 wooden building posts were mapped at seventy underwater sites in Punta Ycacos Lagoon. The posts form the outlines of building walls. Radiocarbon dating wooden posts

from individual buildings indicated many of the sites were multi-component (McKillop and Sills 2022, 2023). The earliest building construction was during the Early Classic, with a dramatic expansion through the Late and Terminal Classic. Most buildings were abandoned by the end of the Terminal Classic, coincident with the abandonment of nearby inland cities including Lubaantun, Nim Li Punit, and Uxbenka, who were the main consumers of the surplus household salt produced at the Paynes Creek Salt Works (McKillop 2019).

The Paynes Creek Salt Works

Salt was produced as part of surplus household production by Maya who lived near family-run salt kitchens. The salt kitchens were pole and thatch buildings dedicated to boiling brine in pots over fires, as well as storing wood fuel, brine in large jars, and salt cakes. This is a common method of salt production worldwide historically and prehistorically, including in the Maya area. At Sacapulas, in the Maya highlands of Guatemala, brine boiling was carried out in salt kitchens near a salt spring (Reina and Monaghan 1981). A couple of dozen open bowls were supported over a fire by stones, with brine constantly added to the bowls until the water evaporated leaving salt. The salty water was enriched in salinity before it was boiled by placing salty soil in a raised container, pouring salty spring water on the soil, and collecting the enriched brine in a pot below. At Sacapulas, the brine boiling pots were broken to remove the salt cakes, with the pottery stored along the interior walls of the salt kitchen and periodically dumped outside the building. Salty soil was also stored on the floor, which raised the level of the floor but provided the opportunity to enrich brine year-round and not just in the dry season.

The brine boiling method was used elsewhere along the coast of Belize, where frequent rainfall makes solar evaporation unfeasible

Fig. 5. Salt cake from Bohol Island Salt Works, Philippines. Courtesy of Andrea Yankowski. Photo by Heather McKillop.



(McKillop 2019). Solar evaporation was used on the northern Yucatán coast where the climate is arid and there is a long dry season. At coastal sites in Belize, brine was boiled in pots over fires, leaving archaeological evidence of briquetage, the broken pots and vessel supports used in boiling brine. In the far south of Belize, the Paynes Creek Salt Works have wooden salt kitchens that provide a model for salt production elsewhere using the brine boiling method but where wooden buildings have not been preserved.

Loose salt may have been stored in jars and transported in woven sacks to markets, as depicted by an image of a “salt person” on a painted mural on the exterior of a temple at the marketplace at Calakumul (Martin 2012). However, the loose salt may have been further heated and hardened over the fire into salt cakes for ease of transport, as at Sacapulas and other historic salt works by salt springs in the Maya highlands (McKillop 2021). In these cases, the salt cakes are removed from the pots before transport. In contrast, the hardened salt cakes were left inside the pots for trade at salt works on Bohol Island in the Philippines (Fig. 5; Yankowski 2010). The Bohol Island salt cakes were standardized in size

and sometimes cut in half or quarters during trade. The excavation of thousands of tiny sherds at Aventura in northern Belize indicates hardened salt cakes were traded from the nearby coast in pots where they were broken near the main plaza (Robin et al. 2019). The standard size of brine boiling pots at the Paynes Creek Salt Works suggests hardened salt cakes were made but that they were removed from the pots before transport to market since there is abundant briquetage at the salt kitchens (McKillop 2021).

The distribution of artifacts associated with buildings at the Paynes Creek Salt Works indicates that some structures were residences whereas others were salt kitchens or were used for other purposes. Building B at Ta’ab Nuk Na underwater site was a residence, as indicated by the variety of different pottery types, stone tools, and other objects but the lack of briquetage (McKillop and Sills 2022). In contrast, Building G at Ta’ab Nuk Na was a salt kitchen, with an artifact assemblage focused on briquetage—the remains of brine boiling. Excavations at Site 74 indicated 98% of the pottery was briquetage. The percentages of briquetage at sites ranged from 80 to 89–90% (McKillop and Sills 2016).

Some of the Paynes Creek salt was used for preserving fish that was traded inland. Although the acidic mangrove peat of the underwater sites rarely preserved bone, use-wear study of chert tools from the sites indicates most were used for processing fish or meat (Fig. 6; McKillop and Aoyama 2018). Boiling brine in pots all day in salt kitchens was an activity that conflicted with time needed for fishing. Either some family members boiled brine while others fished or fish were obtained elsewhere by others such as the nearby settlement on Wild Cane Cay.

Coastal salt works developed and expanded during the Classic period with the rise of inland settlement and the need for coastal salt. The coastal Maya transported marine resources

inland, notably stingray spines, shells, and fish. In exchange, the coastal Maya obtained pottery, chert, and other resources, perhaps including food such as corn. Estimates of salt yields at the Paynes Creek Salt Works show more than enough salt was produced for nearby inland communities such as Lubaantun, Nim Li Punit, and Uxbenka. Even if half the salt was used to salt fish for later use by the coastal Maya salt workers and for inland trade, there was still plenty of salt for inlanders' salt needs (McKillop 2019; McKillop and Aoyama 2018).

Salt Works along the Coast of Belize

The discovery of salt works elsewhere along the Belize coast meant that salt was available within the southern Maya lowlands, which was closer than importing salt from the salt flats on the northern coast of the Yucatán as had been suggested (Andrews 1983). When Andrews (1983) researched ancient Maya salt making and trade, the salt works along the Belize coast had not been reported as most were submerged. Andrews's (1983) model consisted of salt produced by solar evaporation along the north coast of the Yucatán and traded to the southern Maya lowlands of Guatemala and Belize to satisfy the biological needs of the inland Maya during the height of the Classic period civilization in the southern lowlands. Instead of long-distance bulk trade of a basic commodity, salt was likely obtained by regional trade with salt works on the nearest coast (McKillop 2019).

Other salt works have been reported on the coast and cays of Belize by the presence of briquetage (see Fig. 1). Salt works with briquetage are found at Cerros (Robertson 2016), Northern River Lagoon and other coastal lagoons in northern Belize (Masson and Mock 2004), Moho Cay (McKillop 2004), Marco Gonzalez (Graham and Pendergast 1989) and elsewhere on Ambergris Cay (Aimers et al. 2017), at



Colson Point in southern Belize (Graham 1994), Placencia Lagoon (Sills 2016), and at the Paynes Creek Salt Works (McKillop 2002, 2005b, 2019). Apart from Preclassic Cerros, most of the salt was produced on the Belize coast during the Classic period, coinciding with dense inland populations. Trading ports along the coast at Marco Gonzalez and San Juan on Ambergris Cay, False Cay, Wild Cane Cay, and Frenchman's Cay date to the Terminal Classic through the Postclassic, with significant Classic period use of Moho Cay and Late Preclassic at Cerros. The technology for salt production varied, with use of vessels supported over a fire indicated at Placencia Lagoon, Moho Cay, and north coastal lagoon sites but not on Ambergris Cay. Salt making on Ambergris Cay may have used large open platters to make salt by solar evaporation (Aimers et al. 2017).

Terminal and Postclassic Wild Cane Cay

Wild Cane Cay was not abandoned at the end of the Classic period, c. 900 CE, when the nearby inland Maya cities such as Lubaantun, Nim Li Punit, and Pusilha were abandoned. The Wild Cane Cay Maya built coral rock platforms that supported perishable structures of pole and

Fig. 6. Chert stone tools from the Paynes Creek Salt Works, identified by use-wear as wood-working (two top left from Sites 60T and 78L), scraping fish or hide (two bottom left from Sites 60F and 70I), and for cutting fish or meat (from Sites 60ZZ, 46B, 60V, 6E1, 72ZZ, and 72GG). Photo by Heather McKillop. See McKillop and Aoyama 2018 for details.

thatch. These platforms, built using a variety of corals mined from the sea and transported to the cay (McKillop 2002, 2005a), document an active or proactive reaction to rising seas. Wild Cane Cay Maya continued to live in pole and thatch houses that have not been preserved. Active settlement and accumulation of household garbage was a passive form of countering sea-level rise. Settlement continued during historic times until the 1990s, after which sea-level rise and accretion of red mangroves encroached on the island, obscuring and submerging it.

Trading ports along the coast of Belize, such as Wild Cane Cay in the far south, document a thriving circum-Yucatán sea trade during the Postclassic and farther back in time to the Classic, and in the case of Cerros, to the Late Preclassic. The island played a key role in the trade inland of marine resources including Paynes Creek salt to Lubaantun and other inland communities. It also participated in the Caribbean coastal trade starting in the Late and Terminal Classic (McKillop 1996b).

Wild Cane Cay participated in water transport along the Yucatán coast for resources

and commodities from within and beyond the Maya area. The island was a harbor and port along the Caribbean coast. The site is located at the northern end of a line of cays that parallel the coast in the Port Honduras. Wild Cane Cay has a natural harbor formed by a ring of red mangroves that provides shelter from rough seas and wind.

After the abandonment of nearby inland cities at the end of the Classic period, the Maya on Wild Cane Cay expanded their participation in sea trade, integrating the trading port into the circum-Yucatán canoe trade (McKillop 1989, 2005a, 2017). The diversity of trade goods in burials at Wild Cane Cay from various origins, both in the Maya area and beyond, distinguishes the island from other coastal Maya trading ports in Belize and Mexico. If Wild Cane Cay were a subsidiary port for tribute goods destined for Chichen Itza, then we would expect the same types of commodities and resources. This is not the case, as detailed below. Cobos (2023, Table 1) lists pottery types and obsidian sources used by the coastal Maya at trading ports around the Yucatán as supporting evidence that the islands were integrated into a shared trading system focused at Chichen Itza. The diversity of pottery types and obsidian sources used by the Wild Cane Cay Maya indicate they had many contacts and that Chichen Itza was just one among many. Contrary to Cobos's (2023) claim that Chichen Itza controlled coastal Maya trading ports through military control or alliances, it is more likely that the islands were ports along the main trade route along the coast, for lack of most inland settlement.

Burials associated with structures in one of the island's six mounds, Fighting Conch mound, underscore the diversity of sources of trade goods acquired by the Wild Cane Cay Maya. Fighting Conch mound consists of six construction episodes, each with a coral rock foundation, finger coral subfloor, and a hard-packed earthen

Fig. 7. Fighting Conch mound, Wild Cane Cay, profile showing construction with coral rock foundations, finger coral subfloor, and packed earth floor for perishable pole and thatch structure. Photo by Heather McKillop.





Left: Fig. 8. Las Vegas Polychrome vessel from Burial 10, Fighting Conch mound, Wild Cane Cay. Photo by Heather McKillop.

Above: Fig. 9. Jadeite gouge with rosewood handle, from Ek Way Nal underwater site. Photo by Heather McKillop.

floor that once supported pole and thatch buildings that have decayed (Fig. 7; McKillop 2005a). A total of twenty-seven burials were excavated in limestone slab chambers, under rock piles or directly on floors that were covered by coral rock of a new building.

The variety of nonlocal goods found in Postclassic burials at Wild Cane Cay underscores the islanders' participation in trade with Honduras, the Pacific coast, highland Guatemala, northern Belize, the Yucatán, and central Mexico (Fig. 13). Pottery, obsidian, and copper artifacts were obtained from Honduras. The copper bell resembles a style from Quirigua and Chichen Itza. Copper artifacts reported by Lothrop (1952) from Wild Cane Cay were chemically analyzed. The Wild Cane Cay copper bell from Mound 4, Tomb 1 was assayed with a portable XRF machine, which identified it as copper. Certainly, copper bells and other copper artifacts were transported along the Caribbean coast to Lamanai (Simmons et al. 2009), other coastal ports, and to Chichen Itza, but the distribution shows a broad pattern instead of a supply destined for Chichen Itza alone.

The recovery of gold foil from Burial 8 in Fighting Conch mound at Wild Cane Cay indicates trading ties farther south with Colombia. The gold foil was likely wrapped around the outside of a wooden container that decayed. The gold was chemically identified using a portable XRF machine in the Digital Imaging and Visualization Lab at Louisiana State University. Gold is rarely found in the Maya area, although exceptions include Santa Rita Corozal on Chetumal Bay on the north coast of Belize and at Chichen Itza.

Other commodities from Honduras include La Esperanza obsidian. La Esperanza obsidian is typical of sites in lower Central America, rarely found in the Maya area, with exceptions including Wild Cane Cay and the Chan site in the upper Belize River Valley and perhaps as far north along the coast as Marco Gonzalez on Ambergris Cay (according to Cobos 2023, Table 1). Notably, La Esperanza obsidian is not found at Chichen Itza, its coastal port of Isla Cerritos, or at other island ports on the Yucatán coast of Mexico (Cobos 2023, Table 1). Seven lunate-shaped obsidian eccentrics visually sourced to Ixtepeque and El Chayal were



Left: Fig. 10. Zakpah pottery vessel, from Burial 9, Fighting Conch mound, Wild Cane Cay. Photo by Heather McKillop.

Above: Fig. 11. Payil Red pottery vessel, from Burial 15, Fighting Conch mound, Wild Cane Cay. Photo by Heather McKillop.

found in Burial 1 in Fighting Conch mound, along with two lunate-shaped shell eccentrics, a shell carved in the shape of a tooth, and obsidian blades (McKillop 2005a, Fig. 6.30).

A Las Vegas Polychrome vessel accompanied a young woman as part of Burial 10 in Fighting Conch mound. She was placed on her stomach with her legs folded back and her hands and feet commingled behind her back in the “bound-captive” position seen on Maya art. The vessel was placed beside her on the floor (Fig. 8). Joyce (2019) identified the pot as Las Vegas Polychrome from Honduras. Wild Cane Cay may be the northernmost distribution of Las Vegas Polychrome pottery, which is focused in Honduras.

Jadeite and other greenstones from the Motagua River Valley in Guatemala were widely traded in the Maya area, including to Wild Cane Cay. Burials 3 and 7 from Fighting Conch mound contained jadeite beads. The jadeite gouge with its rosewood handle from the underwater site of Ek Way Nal at the Paynes Creek Salt Works is 98% pure jadeite (Fig. 9). Its translucent green color reflects the tightly woven grains that made the gouge a durable material that was suitable as a tool (McKillop et al. 2019).

Cobos (2023, Table 1) cites the presence of Tohil Plumbate pottery as evidence of control of coastal trading ports by Chichen Itza, but this pottery was produced on the Pacific coast of Guatemala and widely traded in Mesoamerica

during the Terminal Classic/Early Postclassic, not just along the coast. The first known Tohil Plumbate vessel from then British Honduras (Belize) was from Wild Cane Cay and published by Shepard (1948). Several years later, Kidder, Stromsvik, and Shook published another image of a Tohil Plumbate vessel depicting a frog (Kidder 1954, Fig. 6f; see also McKillop and Healy 1989, cover).

Wild Cane Cay and Marco Gonzalez share more ceramic ties with Lamanai, located inland on the New River Lagoon in northern Belize, than does either island port with Chichen Itza or in fact with island ports on the Yucatán coast of Mexico. A Zakpah pedestal-based vessel from Burial 9 in Fighting Conch (Fig. 10) resembles Middle Postclassic Buk phase vessels from Marco Gonzalez on Ambergris Cay and Lamanai on the Northern River Lagoon, a navigable waterway with access to the Caribbean in northern Belize (see Fig. 1). Burial 15 included a Payil Red vessel similar in paste to those from Lamanai (Fig. 11). Payil Red and the incised variety, Pacmul Incised, were common at Wild Cane Cay. The incised decorations from Pacmul Incised pottery from Wild Cane Cay are identical to designs from Tulum as reported by Sanders (1960), as well as from Colha and Lamanai in northern Belize.

Burial 8 included a Fine Orange incised pedestal-based vase in a rock tomb, with the skeletal remains protruding outside, along with the previously mentioned gold foil (Fig. 12; McKillop 2005a). Fine Orange pottery is widely distributed, not exclusively at coastal trading ports and Chichen Itza, so its presence at Wild Cane Cay is unsurprising.

The sea was the source for a variety of shells used and traded by the ancient Maya for use as trumpets, decoration, and money (Baron 2018). A *Turbinella angulata* conch shell from Wild Cane Cay was carved into a trumpet (Kidder 1954). A *Spondylus* sp. shell disk with two

perforations for hanging as a clothing decoration was found with an infant burial in a seated position in Burial 14 at Fighting Conch mound. *Spondylus* are deep sea mollusks not available in the immediate area of Wild Cane Cay, which is a mangrove island. A shell disk from Burial 1 associated with a Late Classic household midden elsewhere on the island was made from locally available mud conch (*Melongena* sp.; McKillop 2005a).

The obsidian sources used by the Wild Cane Cay Maya to make blades differ from the sources used by the Yucatán coastal trading ports, indicating they were not integrated into the same trading sphere that supplied Chichen Itza, contrary to the claim by Cobos (Fig. 13; 2023, Table 1). The Yucatecan sites have obsidian from several central Mexican sources, whereas Wild Cane Cay mainly used the highland Guatemalan sources of El Chayal and Ixtepeque, with minor use of only two



Fig. 12. Fine Orange pedestal-based vase, from Burial 8, Fighting Conch mound, Wild Cane Cay. Photo by Heather McKillop.

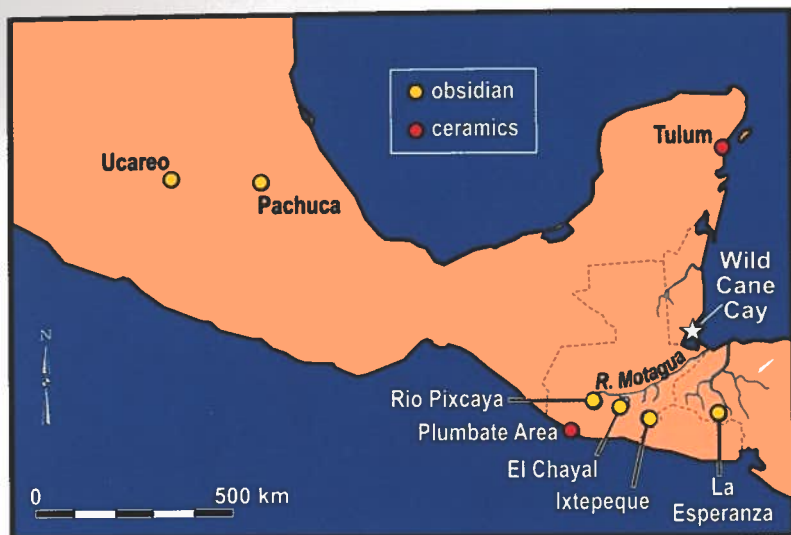


Fig. 13. Map of obsidian sources in Mesoamerica used by the Wild Cane Cay Maya. Courtesy Mary Lee Eggart.

central Mexican sources, including Pachuca green obsidian and Ucareo (McKillop 2005a; McKillop et al. 1988). Dominance of Ixtepeque source obsidian demarcates the Late and Terminal Classic sea trade from the inland dominance of El Chayal obsidian at Lubaantun and other inland sites (McKillop 2019; McKillop et al. 1988).

The Postclassic witnessed an exponential increase in the abundance of obsidian on the island and an increase in the diversity of sources used. Abundance was measured by the number of items per cubic m of midden excavations (McKillop 1989). Both blades and exhausted cores were found, indicating blades were struck from polyhedral cores on the island. Measurement of blade widths indicated they were wider than at other sites, suggesting a lack of conservation in making blades compared to other sites. Evidently, Guatemalan obsidian was readily available and likely was transported down the Motagua River from highland outcrops to the Caribbean coast. Chemical identification of 100 obsidian items using XRF and neutron activation analysis (McKillop et al. 1988) was used to sort the obsidian into visually distinctive groups. Several thousand obsidian artifacts have been assayed to identify their chemical composition

and source using a portable XRF machine in the LSU DIVA Lab.

Obsidian was common throughout Wild Cane Cay in household middens, but it was also found in burials. Several bifacial stemmed obsidian points were also found at Wild Cane Cay. A Classic period burial from Moho Cay near modern Belize City has three obsidian blades and three stingray spines as offerings, alluding to their interchangeable identity as blood letters (McKillop 2004).

Ancient Maya Boats: Canoe Paddles, Boat Models, and a Canoe

Settlement on offshore cays, along with evidence of nonlocal goods recovered at sites like Ambergris Cay, Moho Cay, Wild Cane Cay, and Frenchman's Cay, makes clear the ancient Maya traveled by boats. Murals and boat models from the Classic and Postclassic periods provide pictorial evidence of boats being used by the ancient Maya. Incised depictions on bones from Burial 116, Temple 1 at Tikal (Triak 1963), dating to the Late Classic, and boat models made from carved manatee rib bone from Altun Ha (Pendergast 1979) and Moho Cay (McKillop 1984, 2002:



Fig. 14. Clay boat model, from underwater Site 74, Paynes Creek Salt Works. Photo by Heather McKillop.



Fig. 15. K'ak' Naab' wooden canoe paddle. Photo by Heather McKillop.

Figure 3.38 d) depict canoes specifically. The Temple of the Warriors murals from Chichen Itza show canoes that are the same shape as the Altun Ha and Moho Cay models. Similar boat models made from fired clay were found at Site 74 (Fig. 14; McKillop and Sills 2016), Orlando's (McKillop 2002, Fig. 3.38 b-c), and Ta'ab Nuk Na (McKillop and Sills 2022) at the Paynes Creek Salt Works. The latter were made locally from the same clay and quartz sand temper that is found nearby and used to make the salt pots: Punta Ycacos Unslipped type.

A wooden canoe, canoe paddle, several broken canoe paddles, and miniature canoe models were recovered from sites at the Paynes Creek Salt Works. In 2004, the first ancient Maya wooden canoe paddle was discovered at the edge of the K'ak' Naab' underwater site in the eastern arm of Punta Ycacos Lagoon (Fig. 15; McKillop 2005b). Made from Sapodilla wood, the paddle measures 1.41 m (4' 7") in length. Since Sapodilla wood sinks, the paddle may have been dropped or fallen from a canoe near the shore at K'ak' Naab' and fallen into the mangroves, which preserved the paddle except for parts of the blade that were exposed above the sea floor, leading to sections of the paddle being worm-eaten (McKillop 2017). A full-sized 3-D-printed replica of the

canoe paddle was placed on permanent exhibit in a glass-topped wooden display case in the Tourism Information Center in Punta Gorda. The canoe was found at the Eleanor Betty site in 2006 (McKillop 2019; McKillop et al. 2014) and excavated in 2013. At the time of discovery, it resembled a dug-out log that was about 2.5 m in length, but unfortunately, by 2013 the canoe was broken into several pieces. Located between two lines of palmetto pots, it rested on short wood stakes with a clay funnel underneath, similar to those used in enriching brine by pouring salty water over salty soil and collecting the enriched (saltier) water below (McKillop 2019). Evidently, the canoe was repurposed as a container to hold salty soil in the brine enrichment process.

Conclusions

The Caribbean was important to the ancient Maya as a source of salt and other marine resources, as a transportation corridor, and as a place of settlement, throughout most of Maya prehistory, from about 600 BCE to European contact in the sixteenth century. The trading port of Wild Cane Cay, other island and coastal sites in the Port Honduras, as well as the nearby salt works in Punta Ycacos Lagoon inform on the nature of the Maya economy and the use of

the sea by the ancient Maya. From the earliest Middle Preclassic settlement at the Ich'ak'tun shell midden site, the Maya had external contacts to obtain obsidian from the Maya highland. From this early time, the use of Ixtepeque obsidian likely traded along the Caribbean coast differed from contemporary inland import of El Chayal obsidian via overland routes at Seibal in Guatemala.

Coastal settlement was limited in the Early Classic but expanded significantly in the Late Classic, mirroring the increase in settlement inland. Early Classic settlement included Wild Cane Cay, Pelican Cay, and several sites at the Paynes Creek Salt Works. Wild Cane Cay and Pelican Cay Maya thrived on abundant and diverse marine resources and tree crops (McKillop 1994, 1996a, 2005a). Most of the sites at the Paynes Creek Salt Works date to the Late and Terminal Classic. Trade connections expanded during this time. Warrie Red water jars, including many with distinctive stamped decoration around the vessel shoulder, were traded from inland sites. Decorations include animal decorations similar to those from Lubaantun as well as abstract motifs similar to Altar de Sacrificios and Seibal farther west in Guatemala. This coastal-inland trade was part of an east-west trade corridor linking the inland sites with the coast. Lubaantun-style ocarinas are common at many of the salt works, underscoring the coastal-inland trade.

Long-distance sea trade developed between southern and northern Belize in the Late and Terminal Classic periods, expanding in the Postclassic after the abandonment of inland communities and cessation of coastal-inland trade. Belize Red serving vessels from the upper Belize River Valley and formal chert tools from high-quality northern Belize chert were traded from northern Belize. The formal chert tools that resemble objects from the workshops at Colha

in northern Belize largely replaced impromptu tools from lower-quality local chert that was previously used in the Early Classic. Jadeite and other greenstones were traded from the Motagua River valley outcrops, including the jadeite gouge with the wooden handle from Ek Way Nal and various stone axes (McKillop et al. 2019). Being 98% pure jadeite made the gouge particularly durable as a tool, which explains why it was found in a salt kitchen (since most jadeite is considered a high-status item for caches and burials). The presence of the jadeite gouge also underscores the ability of the salt makers to obtain goods and resources from nearby and farther away. That the salt makers as producer-vendors in regional marketplaces had a valuable commodity meant they could obtain a variety of goods and resources, likely including corn and other items these full-time craftspeople desired (McKillop 2019, 2021).

The excellent preservation of wooden posts that form the walls of pole and thatch buildings at the Paynes Creek Salt Works provides information on the marketplace economy of the Late and Terminal Classic Maya. The pole and thatch buildings provide an example of the types of buildings at Wild Cane Cay and elsewhere in the Maya area where wooden buildings have not been preserved. The distribution of artifacts associated with different buildings at the Paynes Creek Salt Works allowed the identification of building function, with some structures used as houses and others as dedicated salt kitchens where brine was boiled in pots over fires to make salt. The abundance of briquetage—broken salt-making pots—underscores that the Maya were engaged in surplus household production of salt for trade (McKillop and Sills 2022, 2023). This model fits with a marketplace economic model of the Classic Maya in which households produced surplus goods and exchanged them at marketplaces, obtaining obsidian, serving vessels, and other commodities in return (Chase et al.

2015; King 2015; Masson and Freidel 2012). The Paynes Creek Maya traded salt, likely as hardened salt cakes, as well as salted fish to inland communities including Lubaantun and Nim Li Punit in the Classic period. Wild Cane Cay may have supplied fish for salting due to the abundance of fish bones recovered in excavations, along with clay fishing weights (McKillop 2005a).

Although most inland communities in the southern Maya lowlands were abandoned in the Terminal Classic, coastal settlement continued. The Paynes Creek Salt Works were abandoned due to a lack of inland consumers. Wild Cane Cay continued as a coastal community and expanded its external trading connections with more distant and diverse locations compared to the Classic period. Wild Cane Cay does not fit Cobos's (2023) model of control of coastal Maya trading ports by Chichen Itza in the Terminal Classic as part of the city's redistributive economy. Instead, the different sources of trade goods present at Wild Cane Cay as compared to Chichen Itza and its coastal port of Isla Cerritos point to the independence of Wild Cane Cay during the Terminal Classic and Postclassic periods. The presence of exhausted (used) obsidian cores from which thousands of blades were made at Wild Cane Cay indicates on-site production and use of obsidian. Blades are common on the coast and cays of the Port Honduras, but the absence of cores except at Wild Cane Cay suggests blades were produced on that island and traded within the coastal region (McKillop 2005a).

During the Postclassic, Wild Cane Cay was integrated into a coastal Caribbean canoe route obtaining gold from Colombia, goods from Honduras (copper goods, La Esperanza obsidian, and pottery), and high-quality chert and pottery from northern Belize. There are strong connections between Wild Cane Cay and Marco Gonzalez in pottery, notably Zakpah and Payil red pottery, underscoring the coastal

connections along the coast of Belize. Some of the Wild Cane Cay trade goods were from the same sources as those obtained by Chichen Itza, notably Pachuca and Ucareo obsidian from central Mexico, as well as Tohil Plumbate pottery. However, most of the obsidian at Wild Cane Cay was from El Chayal and Ixtepeque in the Maya highlands of Guatemala in contrast to the diverse central Mexican sources used at Chichen Itza and Isla Cerritos and other island sites off the north and west coasts of the Yucatán. Tohil Plumbate was widely traded during the Terminal and Early Postclassic, so it is not surprising to see its presence in both areas. Wild Cane Cay was a ten-acre island site that endured over time from the Early Classic through the Postclassic periods due to the abundant marine resources and tree crops. With its strategic location at the northern end of a range of cays in the Port Honduras, beyond which was open and often rough seas, a natural harbor, and abundant marine resources, the island also flourished as a trading port. During the Classic period, the economy focused on trade between the coast and inland based on the demand for coastal salt. Obsidian, jadeite, and pottery were imported from various regions. During the Postclassic, the Wild Cane Cay Maya continued their island subsistence, trading with other communities with the Port Honduras and expanding along the Caribbean coast and beyond.

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