

28 *BRINE ENRICHING SLAG HEAPS OR MOUNDED REMAINS OF
SALT MAKERS HOMES? EARTHEN MOUNDS IN THE
MANGROVES AT THE PAYNES CREEK SALT WORKS*

Rachel Watson, Heather McKillop and Elizabeth C. Sills

Wooden architecture and artifacts associated with the Classic Maya salt industry are preserved underwater in Paynes Creek National Park, southern Belize. Lacking at these underwater sites is evidence of enriching the salinity of seawater the remains of which form mounds near salt works leaching brine through salty soil—virtually universal in ethnographic and historic case studies. Several earthen mounds in the black mangrove flats rise above the underwater salt works associated with wooden architecture. The mounds at Killer Bee and Witz Naab in the tidal flats are surrounded by briquetage. Are these mounds the remains of domestic platforms or are they the remains of leached soils that were used to enrich brine before boiling the salt over fires? Data from excavations and survey are evaluated to interpret the ancient activities that produced the earthen mounds.

Introduction

Excavations were carried out in 2012 at two earthen mounds in the mangroves near the underwater sites in Punta Ycacos Lagoon, a large salt-water lagoon system in Paynes Creek National Park, southern Belize (Figure 1). Survey and excavation at underwater sites has provided informed about the Classic Maya economy, and in particular, about the production and distribution of salt. Salt, a basic biological necessity, was produced along the coast of Belize by evaporating brine in pots over fires (Graham 1994; MacKinnon and Kepecs 1989; Andrews and Mock 2004; McKillop 1995, 2002). Survey and excavations of the underwater salt works—submerged by sea-level rise—has revealed ancient Maya wooden buildings with an abundance of briquetage—the remains of pots used for evaporating brine over fires (McKillop 1995, 2002, 2005a-c, 2008; McKillop et al. 2010 a-b, 2011; Sills 2007; Sills and McKillop 2010; Somers 2007).

The focus of archaeological research in Paynes Creek National Park has been the wooden architecture, since its discovery during survey in 2004 (McKillop 2005a). In this paper, we report the excavations at two earthen mound sites, including Witz Naab' and the Killer Bee site, both dating to the Classic period. Killer Bee had been mapped and limited excavations, including a shovel test, had been carried out (McKillop 2002). The goals of the 2012 excavations were to understand the relationships of the earthen mounds to the inundated salt works with preserved wooden architecture. In order to estimate the function of the mounds,

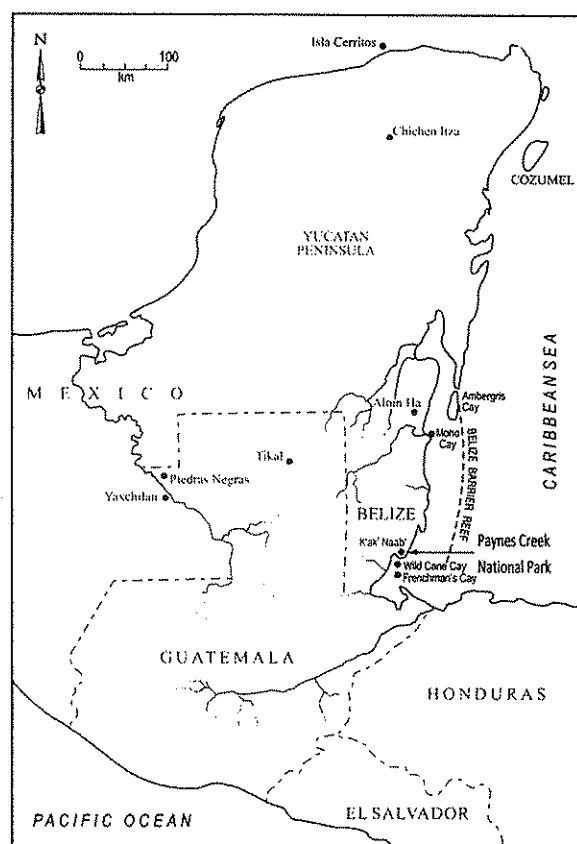


Figure 1. Location of Paynes Creek National Park, Toledo District, Belize.

several hypotheses were developed with test implications. The hypotheses were developed using ethnographic and archaeological data about low lying mounds and salt works in the Maya area. Four possible uses include leaching mounds where brine was concentrated by pouring it through salty soil before the evaporation process (MacKinnon and Kepecs



Figure 2. Clearing Low-Lying Mound at Killer Bee Site.

1989; McKillop 1995, 2002; Nance 1992); residential platforms, administrative structures (Andrews 1983), or multi-functional platforms.

Leaching Mounds for Concentrating Brine

The earthen mounds at Witz Naab' and Killer Bee could be leached soil left over from pouring water through salty soil, as is carried out elsewhere in modern times, notably at the Maya highland community of Sacapulas (Reina and Monaghan 1981). The Guzman mound located on a salt flat along the Guatemalan coast was excavated by C. Roger Nance (1992) as part of salvage project. The mound dates to the Late Preclassic and is near modern-day salt operations. The mound's matrix contained leached soils, charcoal, and daub. The charcoal demarcated linear patterns in the mound, interpreted as evidence of evaporating brine in pots over fires to produce salt. The ceramics excavated from the mound were thick-walled pots similar to ceramics noted at salt production sites in the Yucatan (Andrews 1983) and coastal Belize (Graham 1994; MacKinnon and Kepecs 1989; Mock 1994; McKillop 2002). Excavation of the Guzman mound produced no clay cylinders, which were the vessel supports used at the Paynes Creek sites to hold the vessels over a fire. However, ethnographic examples at

Sacapulas show stones being used for vessel elevation instead of cylinders (Reina and Monaghan 1981). Nance believes that rim fragments could have served a similar purpose at Guzman. If the Witz Naab' and Killer Bee mounds are similar to the Guzman mounds, then we should expect leached soils, charcoal, briquetage, and little evidence of domestic deposits. Pottery would be restricted to briquetage which includes thick walled jars, sockets and spacers, and solid clay cylinder supports used in evaporating brine over fires to make salt. McKillop (2002) has identified the coarse-fired ceramic jars and bowls found at the Paynes Creek salt works as Punta Ycacos Unslipped.

MacKinnon and Kepecs (1989) reported mounds at all the salt making sites in the Palencia lagoon area, Belize. The mounds are described as low lying, amorphous in shape, and range from a meter to a meter and half in height. The mounds consist of leached soils resulting from the evaporating brine over fires and briquetage. Little domestic evidence was found associated with the mounds leading to an interpretation that their use was for seasonal salt production (MacKinnon and Kepecs 1989).

McKillop (2002) previously excavated in a low lying earthen mound and in the surrounding tidal flat at Killer Bee (Figure 2). The low mound situated on the northern channel of the Punta Ycacos Lagoon is surrounded by a mix of broadleaf and mangrove forest. Artifacts were noted on the surface of the mound. A 1 x 1 m unit was excavated to locate diagnostic ceramics, to determine the function of the mounds, and garner information concerning sea-level rise. Few diagnostic ceramics were recovered from the unit. A shovel test was conducted 12 m west of the mound in an area where artifacts were noted upon the surface. Excavations carried out in 20 cm levels included briquetage, both above and below the water table, which was encountered at 40 cm depth.

Murata's (2011) research at Wits Cah Ak'al has added to the growing volume of research about ancient Maya salt production. Wits Cah Ak'al is an inland site located 12 miles west of Belize City on the coastal plain. The site consists of 28 mounds, clustered in groups of 2 or 3 mounds, along the edge of a mangrove

swamp system associated with Straight Lagoon. Murata identified briquetage commonly associated with salt production both on the surface and within the mounds of Cah Ak'al. No domestic artifact assemblages were identified at the site. Cah Ak'al's artifact assemblage includes briquetage from the Paynes Creek salt works, so the earthen mounds at Cah Ak'al may have served a similar function. However, the Cah Ak'al mounds are inland, albeit only 12 miles, so we might expect some differences in use as compared to the low earthen mounds at Witz Naab' and Killer Bee site.

Residential Platforms

If the earthen mounds at Paynes Creek were residential platforms then we would expect to find evidence of house floors distinct from the surrounding soils matrices and deposits associated with domestic activities. In addition to finding floors, there should be evidence of a variety of vessel shapes for household use, as well as other objects used by householders, such as obsidian, chert, and faunal/flora remains associated with subsistence. The platform mound is a common architectural style in the Maya area. Early research focused on temples or monumental architecture of the larger urban Maya centers and overlooked the lower lying platform mounds. Labor investment studied by such archaeologists as Abrams (1994) and Haviland (Haviland et al. 1985).

Separate material was sometimes used as a floor for a perishable structure. Compressed clay or marl has been identified as living surfaces at many sites (Awe and Healy 1994; Freidel 1979; Haviland et al. 1985; Healy 1990; McKillop 1996, 2005). Successive construction layers developed over time as the perishable structure was torn down and a new construction layer was added. The nearby island trading ports of Wild Cane Cay and Frenchman's Cay had hard-packed earthen floors on coral rock foundations (McKillop 2005; McKillop et al. 2004). Evidence of perishable structures has been recorded at several sites in the Maya area, most notably at the Paynes Creek salt works where the actual building posts form rectilinear patterns, including interior room divisions (McKillop 2005a; Sills and McKillop 2007).

However, the earthen mounds at the Paynes Creek sites were not expected to have wooden architecture preserved due to immersion in mangrove peat.

Elsewhere in the Maya area, hints of wooden architecture are reported at many sites. Remnants of postholes have been noted at Tikal (Haviland et al. 1985), Cerros (Freidel 1979; Robertson and Freidel 1986), Cuella (Hammond et al. 1995), and San Juan (Guderjan 1988). Roofs were constructed of tightly interwoven native palms. Roofs were supported by single or multiple wooden upright poles and wooden crossbeams or lentils. According to Wauchop's (1938) observations, the Maya cooked outside their homes so chimneys and windows were not necessary.

Administrative Structure

The Paynes Creek earthen mounds may have had a ritual role in salt production, as suggested for the Paynes Creek underwater sites due to the presence of a limited array of ritual objects (McKillop 2002). Evidence of feasting—ocarinas and serving vessels—was found at some of the underwater saltworks in Paynes Creek, interpreted as rituals, perhaps associated with the beginning of the salt season each year (McKillop 2002). Salt rituals are carried out in the Maya highlands at San Mateo Ixtatán and Sacapulas in Guatemala (Reina and Monaghan 1981). Emal in the Yucatan contains a prehispanic temple platform, colonial and modern shrines, as well as large wooden crosses (Andrews 1983). Indigenous religion and Catholicism have been combined at some salinas. For example, a Catholic church with a shrine to the Virgin del Rosario is located at the Salinas Atzam in Chiapas. Virgin del Rosario is the patron saint that protects the sacred salts used by the local communities (Andrew 1983). Salt is used to subvert the power of witches and for exorcisms (Redfield and Villa Rojas 1934).

The presence of a *manos* and *metates* cache could indicate a ritual or household function of the mounds. There are four sets of *mano* and *metates* made from material to represent different colors. Four is a significant number in Maya cosmology and color and direction were associated with four deities: east-red, north-white, west-black, and south-yellow

(Thompson 1934). Tedlock (1996:220) noted in his translation of the Popol Vuh that four divisions referred to the gods that measured the surface of the Earth. This is believed to be associated with a corn field being laid out for cultivation. Furthermore, the Maya cosmogram is represented by four roads radiating from the center and colors are associated with the sun's daily cycle (Bassie-Sweet 2008).

Multi-Functional Platform

The function of the mounds under study in Paynes Creek may have changed over time and incorporated one if not more of the possible hypotheses discussed above. The mound excavated at Witz Naab' and Killer Bee site may have initially been used for leaching salty soil and later used as a residential platform, since the land would have been created. Perhaps local administrators lived on raised platforms overlooking the salt works as the demand for salt by the inland urban Maya increased during the Classic period (McKillop 1995, 2002, 2005). If the use of the mound did change over time, excavations should expose the construction. We would expect that the leached soils with little domestic refuse would be the deepest deposits. If the mound then became a domestic/sacred space, excavations should reveal evidence of floors and structures.

Witz Naab' Excavations

Excavations were carried out at Witz Naab' and the Killer Bee site during the 2012 field season, both located near the underwater salt works in Paynes Creek. Witz Naab' (Figure 3) consists of two earthen mounds covered with palmetto palms (*Accelorocea wrightii*). The mounds are located in black mangrove tidal flats in the West Lagoon section of Punta Ycacos Lagoon. Abundant briquetage is visible on the surface of the tidal flats. The mounds are covered with modern vegetation. A surface inspection prior to excavations revealed that briquetage and charcoal is eroding from the mound. Field observations indicate that both mounds are impacted by tidal changes. During low tide, the surrounding mangrove tidal flats are dry. In contrast, at high tide the tidal flats are inundated and water encroaches on the lower parts of the mounds (Figure 4).

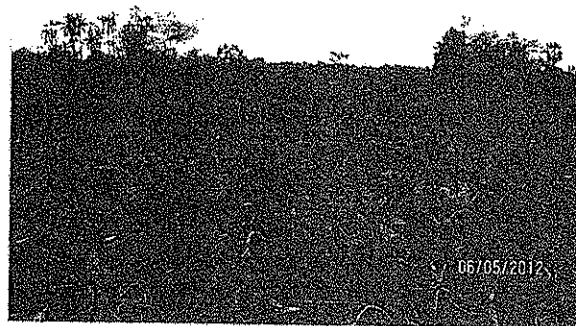


Figure 3. Witz Naab', Paynes Creek National Park, Belize.

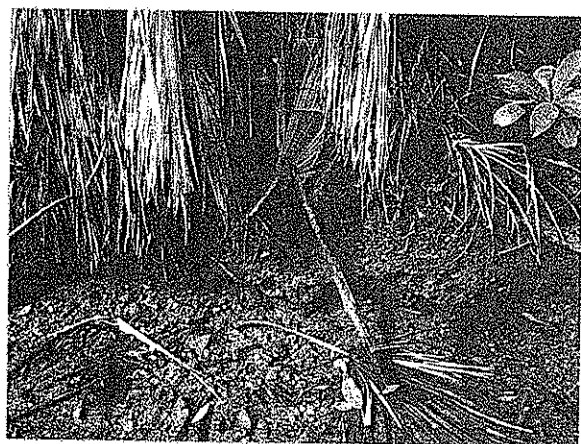


Figure 4. Witz Naab'— Briquetage and Charcoal Eroding from the Mound.

Mound A was selected for excavation because the mound had easier access due to its location near open water and there would be less impact on the dense mangroves that colonize the area. We laid out a 1x4 m trench from the base to the top of the mound in an area with little disturbance from modern trees (Figure 5). We choose not to conduct excavations off the mound due to the inundated conditions, which were well-covered by the underwater excavations at other sites in Paynes Creek. Units were excavated in 20 cm levels to discover the stratigraphy. A screening station was set up on the mound. The excavated material was dry screened through ¼" excavation mesh except the lower levels that were wet. Initially, artifacts were hand-sorted from the sediment, but we changed to water screening, which recovered more material. The units were labeled 0-1 m starting at the base of the mound, with 3-4 m at

the top. Units 0-1 m and 1-2 m were excavated to a depth of 40 cm. Unit 2-3 m was excavated to a depth of 100 cm. Unit 3-4m was excavated to a depth of 205cm.

In this paper we focus on the results of units 2-3 m and 3-4 m, which revealed a complex stratigraphy. The first 0-20 cm consisted of top sediments and roots. The palmetto palm has a dense root system and is difficult to excavate even with a sharp shovel. Little cultural material was recovered in this level compared to lower levels. However, we did recover briquetage composed of amorphous clay lumps (ACLs) which are the remnants of salt making ceramics that are unrecognizable by form, as well as an occasional solid clay cylinder vessel support.

Levels 20-40 cm and 40-60 cm consisted primarily of ACLs and solid clay cylinder fragments. The levels were densely packed with discarded briquetage. Little or no charcoal was noted. Below 60 cm, there are several distinct lenses of charcoal and clay that are clearly visible on the excavation walls. We continued to recover ACLs, with the addition of a few recognizable vessel sherds. We encountered the water table at approximately 128 cm depth. Alternating charcoal and clay layers continue to a depth of 185 cm. Below 185cm, the levels are almost exclusively charcoal. Shovel testing deeper revealed a hard cemented lens of grey clay about 205 cm depth.

Visible lenses of charcoal on the eastern wall of the trench suggest that there were two separate earthen mounds. At some point in the Late Classic period, perhaps when salt production reached its peak at the Paynes Creek salt works, the discard of briquetage and leaching sediment intensified, resulting in a single large mound. We had anticipated finding the mangrove peat that surrounds the mound once we hit the depth of the mangrove flats, but did not. Apparently the earthen mound was constructed before the mangroves developed in the area.

The wall profiles were cleaned, photographed, videotaped, and drawn. We collected a sediment column sample from the top to the base of the mound from the eastern wall of the trench. We also collected a set of 99 samples for magnetic susceptibility testing from



Figure 5. View of Trench 1, Witz Naab, Facing South.

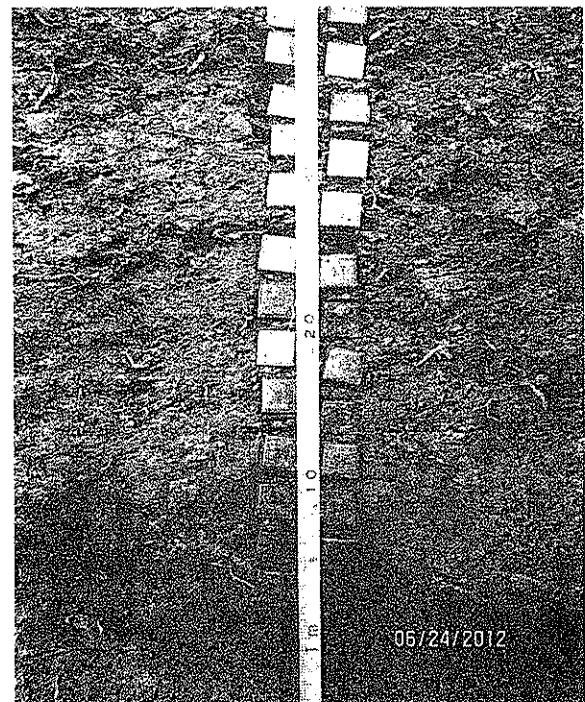


Figure 6. Sediment Collection for Magnetic Susceptibility Testing.

the same wall, as well as samples of charcoal and other distinctive lenses (Figure 6).

Excavations at the Killer Bee Site

The Killer Bee site is a low lying earthen mound situated on the northern channel of Punta Ycacos Lagoon. The site consists of briquetage on the surface in a black mangrove tidal flat as well as an earthen mound. Excavations in the tidal flat from previous fieldwork (McKillop 2002) indicated a Late Classic age of the site and abundant briquetage. Previous excavations in the earthen mound suggested it was a slag heap from leaching water through salty soil to enrich the salt content before evaporating the brine over fires to make salt.

After a hike through the mangroves and finding an area that was not completely covered with ping wing, a prickly native pineapple, we set up a 1x3 m trench. Units were excavated in 20 cm levels. The Killer Bee mound is lower in elevation than the mound at Witz Naab'. We encountered the water table at 50 cm (Figure 7). All sediment was hand sorted for artifacts. Like Witz Naab', the mound consisted of sediment mixed with briquetage. Although the artifacts were eroded at the Killer Bee site, there was still a larger amount of recognizable forms of the salt making assemblage including vessel supports (cylinders), spacers, sockets, and vessels. Unlike Witz Naab', no substantial amounts of clay or charcoal was found at the site.

Conclusions

Excavations at Witz Naab' and Killer Bee indicate that the earthen mounds are not the remains of domestic structures or residences. The excavations at Witz Naab' reveal briquetage and not the type of household assemblage that is typically associated with domestic occupation (see McKillop 2002). Excavations within the mound at Killer Bee reveal a similar artifact assemblage as that of Witz Naab'. The lack of variety among the artifact assemblage strengthens the evidence that these mounds were not used for domestic occupation but for salt production.

Furthermore, the mounds are not similar to other domestic mounds within the area, such as the coral foundations of pole and thatch buildings at nearby Wild Cane Cay and Frenchman's Cay (McKillop 2005; McKillop et al. 2004). No floors were encountered during excavation to indicate that there was once a



Figure 7. Excavation at Killer Bee Site.

living surface at either site. No evidence of multiple reconstruction episode was identified either. Multiple construction episodes have been noted at nearby Wild Cane Cay and Frenchman's Cay. Multiple floors were identified within the architecture of the mounds at Wild Cane Cay.

No evidence of any ritual or administrative function could be discerned through excavation. No artifacts associated with ritual practices have been recovered at either Witz Naab' or the Killer Bee site. Figuring whistles and fine ware ceramics have been recovered at other salt production sites within Paynes Creek.

The strongest case can be made that the earthen mounds at Witz Naab' and Killer Bee are in fact used in the brine enrichment process. The mounds were built up as a result of brine enrichment for salt production. Any brine-enriching mounds near the underwater salt works would have been washed away by tidal fluctuations and storm events. The two mounds in this study share characteristics the mounds described at Cah Ak'al. The presence of briquetage at Cah Ak'al indicates some level of salt production. However, not all the mounds at Cah Ak'al are associated with salt production. Furthermore, Murata's (2011) description of various other ceramic, artifact, and faunal assemblage have not been noted at other salt sites and indicate that Cah Ak'al has a complex history.

Although the mounds served a similar function at both sites there are some differences among the two sites. The mounds at Witz Naab'

are substantially taller than those at Killer Bee. The mounds at Witz Naab' are approximately 1.5m in height. The single mound at Killer Bee is a little over .5m high. This difference in size may have implications for the scale of production that occurred within the Paynes Creek National Park salt sites.

Soil and charcoal samples for Site 50 and Killer Bee will be submitted for standard C-14 and Accelerated Mass Spectrometry (AMS) dating to establish the chronology of the site. Are these sites contemporaneous? If so, why are there differences in the size and internal structure of the mounds at the two sites? As previously stated, the artifacts at Killer Bee appear eroded more than the assemblage at Witz Naab'. However, the vessel form and function was still recognizable in most of the assemblage at Killer Bee. The majority of the assemblage at Witz Naab' is what we have identified as ACL. Is the mound at Killer Bee older than Witz Naab'? If the mounds are not contemporaneous, then interpretations concerning the scale of production through time can be made for the salt production sites within the Paynes Creek National Park.

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References Cited

- Andrews, Anthony P.
1983 *Maya Salt Production and Trade*. University of Arizona Press, Tucson.
- Andrews, Anthony P. and Shirley B. Mock
2002 New Perspectives on Salt Trade. In *Ancient Maya Political Economies*, edited by Marilyn A. Masson and David A. Freidel, pp. 307-334. Alta Mira Press, Walnut Creek, CA.
- Awe, Jamie and Paul F. Healy
1994 Flakes to Blades? Middle Formative Development of Obsidian Artifacts in Upper Belize River Valley. *Latin American Antiquity* 5:193-205.
- Bassie-Sweet, Karen
2008 *Maya Sacred Geography and the Creator Deities*. University of Oklahoma Press: Norman.
- Bell, Charles N.
1899 *Tangweera: Life and adventures among the gentle savages*. London.
- Freidel, David A.
1979 Cultural Areas and Interaction Spheres: Contrasting Approaches to the Emergence of Civilization in the Maya Lowlands. *American Antiquity* 44:36-54.
- Graham, Elizabeth
1991 Archaeological Insights into Colonial Period Life at Tipu Belize. *The Spanish Borderlands in Pan-American Perspective*. *Columbian Consequences* Vol. 3, edited by David Hurst Thomas, 319-35. Smithsonian Institution Press, Washington D.C.
- 1994 The Highlands of the Lowlands: Environment and Archaeology in Stann Creek District, Belize Central America. *Monographs in World Archaeology* No. 19. Madison, Wis.: Prehistory Press.
- Hammond, Norman
1975 Lubaantun: A Classic Maya Realm. *Monographs of the Peabody Museum of Archaeology and Ethnology* 2, Harvard University Press; Cambridge.
- Haviland, W.A., M.J. Becker, A. Chowing, K.A. Dixon, and K. Heider
1985 *Tikal Report No.19 Excavations in Small Residential Groups of Tikal: Groups 4F-1 and 4F-2*. University of Pennsylvania, Philadelphia.
- Healy, Paul F.
1990 Excavations at Pacbitun, Belize: Preliminary Report of the 1986 and 1987 Investigations. *Journal of Field Archaeology* 17:247-262.
- MacKinnon, J. Jefferson, and Susan Kepecs
1989 Prehispanic Salt-Making in Belize: New Evidence. *American Antiquity* 54:522-33.

- McKillop, Heather
 1995 Underwater Archaeology, Salt Production, and Coastal Maya Trade at Stingray Lagoon, Belize. *Latin American Antiquity* 6:214-228.
- 1996 Ancient Maya Trading Ports and the Integration of Long-Distance and Regional Economies: Wild Cane Cay in South-Coastal Belize. *Ancient Mesoamerica* 7:49-62.
- 2002 *Salt White Gold of the Ancient Maya*. University Press of Florida, Gainesville.
- 2005a Finds in Belize document Late Classic Maya Salt Making and Canoe Transport. *Proceedings of the National Academy of Sciences* 102:5630-5634.
- 2005b *In Search of Maya Sea Traders*. Texas A & M University Press, College Station.
- 2005c Classic Maya Workshops: Ancient Salt Works in Paynes Creek National Park, Belize. *Research Reports in Belizean Archaeology* 2:279-289.
- 2008 One Hundred Salt Works! The Infrastructure of Ancient Maya Salt Industry. *Research Reports in Belizean Archaeology* 5:251-260.
- McKillop, Heather, E. Cory Sills, and Jessica Harrison
 2010a Ancient Vegetation and Landscape of Salt Production in Paynes Creek National Park, Belize. *Research Reports in Belizean Archaeology* 7:245-252.
- 2010b A Late Holocene Record of Caribbean Sea-Level Rise: the K'ak' Naab' Underwater Maya Site Sediment Record, Belize. *ACUA Underwater Archaeology Proceedings*.
- Murata, Satoru
 2011 Maya Salters, Myay Potters: The Archaeology of Multicrafting on Non-Residential Mounds at Wits Cah Ak'al, Belize. Ph.D dissertation, Graduate School of Arts and Sciences, Boston University.
- Nance, C. Roger
 1992 Guzman Mound: A Late Preclassic Salt Works on the South Coast of Guatemala. *Ancient Mesoamerica* 3:27-46.
- Redfield, Robert and A. Villa Rojas
 1934 *Chan Kom. A Maya Village*. Carnegie Institution of Washington, Publication 448. Washington, D.C.
- Reina, Ruben E. and John Monaghan
 1981 The Ways of the Maya: Salt Production in Sacapulas, Guatemala. *Expedition* 23:13-33.
- Sills, E. Cory and Heather McKillop
 2010 The Architecture of Salt Production at the John Spang Site, Paynes Creek National Park, Belize. *Research Reports in Belizean Archaeology* 7:253-258.
- Somers, Bretton M.
 2007 *Spatial Analysis of the Preserved Wooden Architectural Remains of Eight Late Classic Maya Salt Works in Punta Ycacos Lagoon, Toledo District, Belize*. Ph.D dissertation, Department of Geography and Anthropology, Louisiana State University, Baton Rouge, Louisiana.
- Tedlock, Dennis
 1985 *Popol Vuh: The Definitive Edition of the Mayan Book of the Dawn of Life and the Glories of Gods and Kings*. New York: Simon and Schuster.
- Thompson, J Eric S
 1934 Sky bearers, colors and directions in Maya and Mexican religion. In *Contributions to American Archaeology*, Vol. 10. Carnegie Institution of Washington.
- Wauchope, Robert
 1934 *Modern Maya Houses: A Study of Their Archaeological Significance*. Carnegie Institution of Washington, Publication 502. Washington, D.C.

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