

2
3 **ABSTRACT**

4 Research at the Selin Farm site in northeastern Honduras examined changing cultural
5 landscapes in a region whose prehistory is poorly understood. Low-impact field methods and
6 radiocarbon dates reveal how this cultural landscape changed in response to shifting priorities among its
7 inhabitants from AD 300 – 1000. We found evidence for rapid accumulation of deposits beginning
8 around AD 600, when the site nearly doubled in size over the span of just decades, before retracting
9 again within a few centuries. Although it was caught up in some of the broader social and political
10 changes that began around AD 600 throughout northern Honduras and southern Mesoamerica, the
11 longevity of this site suggests stability of the cultural and ecological systems in which it was embedded
12 until the final centuries of occupation. Well-preserved, long-term deposits make Selin Farm an ideal
13 location in which to explore entangled processes of environmental and social change in the little-known
14 small-scale societies of Central America.

15 **Keywords:** Northeastern Honduras, LIDAR analysis, shell mound, coring, low impact fieldwork,
16 radiocarbon dating, mangrove lagoon

18 **Introduction**

19 The Selin Farm site (H-CN-5) sits on the edge of Guaimoreto Lagoon, a mangrove wetland in
20 northeastern Honduras (Figure 1). Since excavations by Junius Bird in the 1930s (Strong 1933, 1935) and
21 Paul Healy in the 1970s (Healy 1978a, 1983), this site has formed the backbone of regional
22 archaeological chronologies and has been of primary importance in understanding how people in
23 northeastern Honduras related to their environment, to each other, and to Mesoamerican and other
24 Central American cultures (Epstein 1957; Healy 1984a, 1984b, 1993). Selin Farm, however, covers 16 ha
25 of land and comprises a minimum of 27 mounds, and investigations so far have only scratched the
26 surface of what the site has to offer. In addition to its key role in describing the lives of Indigenous
27 people in an otherwise poorly known part of the world, the Selin Farm site also provides a record of the
28 long-term development of two interlinked processes. It contains a 700-year record of the relationship
29 between the people at Selin Farm and the nearby mangrove lagoon, which allows an exploration of the
30 processes associated with the initial development and later degradation of the wetland. It also spans a
31 key period in the region's social history during which inequalities began to emerge alongside population
32 growth, shifting cultural identity, and increasing use of agriculture.

33 To complement earlier research that focused on a few prominent locations within this site, we
34 brought new technologies and minimally invasive research methods to bear on the entire cultural
35 landscape, including lidar analysis, coring, and radiocarbon dating. Lidar analysis refined site maps for
36 Selin Farm, but also revealed previously unknown patterns in site occupation, construction, and
37 landscape use, particularly in areas under dense vegetation. Surface observations and coring provided
38 preliminary information about how each mound was constructed and how it was used. Cores also gave
39 us access to organic material from near the bottom of most mounds—we obtained radiocarbon dates
40 from 25 mounds and were able to date both the top and bottom of nine mounds. Results suggest that
41 the people who lived at Selin Farm invested significant amounts of labor into intensive exploitation of

lagoon resources over the course of 700 years that resulted in large deposits of shell and bone. Following several centuries of slow, steady growth, the site experienced a period of rapid expansion during which the site's footprint doubled in as little as a few decades. Whatever the cause of this expansion, it may have taxed local resources and pushed up against the carrying capacity of even the rich Guaimoreto Lagoon. After about a century, occupation at the site contracted both spatially and functionally until its abandonment (see also Healy 1978a), suggesting that neither the rate of growth nor the size of the population could be sustained by ecological, economic, and political structures. Detailed chronological and spatial information reveals changing patterns in habitation, resource use, and ritual practices over time, providing a baseline for building our understanding of the interaction between human ecodynamics and social inequalities in small-scale societies.

Background

History of research at Selin Farm

Selin Farm is among the most studied sites in northeastern Honduras because of its size, excellent preservation, the presence of several mounds with stratified deposits, and evidence of long-term occupation spanning at least 700 years. The site's occupation spans the Early Selin (AD 300 – 600), Basic Selin (AD 600 – 800), and Transitional Selin (AD 800 – 1000) periods (Epstein 1957; Healy 1978a, 1983; Stone 1941). Previous research identified 20 mounds, loosely grouped into two concentrations—one around a roughly circular open area in the northwest part of the site and another less organized group in the southeast part of the site.

The site's name derives from its location on an old portion of the United Fruit Company farm, which likely contributed to the prevalence of its materials among U.S. based collections (see Cuddy 2007; Luke 2006). Selin Farm was first recorded by Spinden (1925) and later briefly excavated by Junius Bird of the Boekelman Shell Heap Expedition in 1931 (Strong 1933, 1935). Epstein (1957) relied heavily on Bird's assemblage from Selin Farm to develop the first chronological sequence for the region. Most of

Bird's notes detailing his excavations at the site were lost (Epstein 1957: 40), and the available notes and maps provide an unclear picture of his work there (see also Cuddy 2007: 146).

Subsequent mapping of the site by Healy (1978a) used a distinct, letter-based labeling system for features at the site (Table 1), which we have continued to use and expand on. In the 1970s, excavation and radiocarbon dating by Healy (1978a) revealed that the site was continuously occupied during at least AD 300-1000. He excavated samples from Mounds A, D, I, and K. Healy's work also refined the chronological sequence of the region (Healy 1993) and was the first study of the paleoecology of the area (Healy 1983). More recently, museum collections from the site were used by Cuddy (2007) in his study of political identity in northeast Honduras, and Goodwin's excavations at Mounds I, O, P, and U formed the basis for her research on identity and feasting at Selin Farm (2019). In 2019, we returned to the site to collect cores and lidar data. Our work broadens the exploration of Selin Farm and creates a more detailed chronological framework for interpreting both past and future investigations.

Cultural and environmental context

Prehispanic northeastern Honduran communities were situated at the border between Mesoamerica and lower Central America, in an area likely inhabited by the ancestors of the modern day Pech (Davidson 1991; Griffin et al. 2009; Lara Pinto 1991; Newsom 1986). Cultural developments in northeastern Honduras are often defined relative to those taking place within the larger, more complex societies to the north and west – as has historically been the case for groups in Southeastern Mesoamerica– but local communities followed a unique trajectory of cultural and social development (e.g., Fowler 1991; Henderson and Hudson 2015; Graham 1993; Schortman and Urban 1994; see also Goodwin et al. 2021 for a recent review of this literature). Little is known about the period before AD 300 in northeastern Honduras. In fact, no sites are known from the end of the poorly defined Cuyamel period (~1200-300 BC) until the beginning of the Selin period (AD 300-1000). Settlements dating to the

Selin period were scattered throughout valleys and coastal plains (Healy 1975; Sharer et al. 2009). These consisted of small, loosely organized mound groups inhabited by part-time horticulturalists who also exploited rich coastal and tropical forest resources (Healy 1983).

Previous research suggests that Selin period populations interacted to some extent with Mesoamerican groups throughout the Maya Classic period (AD 300-900). Groups to the north and west underwent dramatic processes of decentralization and depopulation at the end of the Terminal Classic (~AD 800-1000), as documented by extensive work in the Ulua (Hendon et al. 2013; Joyce 1986, 2014; Lopiparo 2003, 2007) and Naco (Schortman and Urban 2011) valleys. A similar process of decentralization occurred in the interior of northeastern Honduras (Begley 2021). Societies in the coastal region of northeastern Honduras, on the other hand, increased in complexity with more numerous and larger, planned settlements appearing on the landscape immediately following the end of the Selin period (Healy 1984a, 1984b).

Around the same time that Selin Farm was abandoned, regional exchange networks shifted south towards lower Central America (Cuddy 2007; Epstein 1957; Healy 1993). During the subsequent Cocal period (AD 1000 – 1600), village layouts and ceramics reflected a closer identification with lower Central American cultures along the Atlantic coasts of Nicaragua and Costa Rica (Dennett 2007; Healy 1984b). However, the exact nature of these events and their timing are poorly understood. Prior to the current study, the chronology of northeastern Honduras hung on fourteen radiocarbon dates spanning two thousand years of occupation, obtained throughout the northeastern coastal region including the entire departments of Colon, the Bay Islands, and Gracias a Dios (Healy 1975, 1978a, 1984b; see Begley 1999 and Brady et al. 2000 for dates from related developments in Olancho) (Figure 1).

The Selin Farm site sits in a spectacular ecological setting, about 600 m from the edge of Guaimoreto Lagoon and 3.5 km from where the lagoon emerges into Trujillo Bay (Figure 1). Guaimoreto Lagoon is a mangrove wetland that is home to hundreds of species of shellfish, fish, birds, and reptiles,

as well as manatees and a few small cetaceans (ICF 2012; Rivera et al. 2019; Rodríguez 2018). The Bay of Trujillo hosts a variety of ecosystems such as coral reefs, sea grass beds, and extensive sandy shores, and the deep Cayman Basin draws close to shore just outside the bay. The Silin River (spelled differently from the site name) flows directly into Guaimoreto Lagoon, and the larger Black River and Aguan River are nearby. On land, native coastal evergreen tropical forests cover the slopes of the Capiro and Calentura Mountains, which rise to 600 m above MSL within 4 km of the site. Thus, people living at Selin Farm had ready access to the deep fishing waters of the Cayman Basin, the calm reefs and seagrass beds of the Bay of Trujillo, a rich and productive mangrove lagoon, multiple river valleys, lowland forests, and uplands.

Healy's research at Selin Farm suggested that people took full advantage of this wealth of resources. He found a highly diverse assemblage of fish, shellfish, mammals, birds, and reptiles, indicating that the community used their landscape and waterscape to their fullest extent (Healy 1983). Based on the presence of manos and metates, he suspected that people here practiced maize agriculture (Healy 1978a), although more recent research indicates that these tools were used for wild plants and manioc, which was probably grown on a relatively small scale (Goodwin 2019).

The Selin Farm Site

There are two different types of mounds commonly found at Selin Farm, those made of clay and those made of shell (Figure 2). Shell mounds consist of dense deposits of shell, bone, pottery, and other artifacts, with very little sediment matrix. Healy (1978a) and Goodwin (2019) excavated only one clay mound each, but both found that they contained relatively few artifacts or other materials. Healy (1978a) found multiple hard packed floors in clay Mound K, and according to Epstein (Epstein 1957), Bird also found a burial and a hearth in clay Mound C.

Mounds H and I stand out from all others at Selin Farm because of their size, construction, and function. Mound I began as a clay mound but transitioned about 1.5 m from the bottom into a well-

138 stratified matrix of mixed shell, pottery, and sediment. Shellfish and pottery are much more loosely
139 packed and have more matrix than other shell mounds at the site (Figure 2). It is also the only shell
140 mound at the site with documented evidence for a superstructure (Goodwin 2019). Mound H, which is
141 adjacent to Mound I and slightly smaller, has not been excavated, but cores suggest it is constructed of a
142 similar matrix and may have served a similar function to Mound I, which Goodwin (2019) argues was
143 related to episodic, large-scale feasting at the site.

144 **Methods**

145 We used several data collection and analysis methods to address changing landscape use
146 through time at the Selin Farm site, including lidar mapping and surface analysis, coring, surface survey,
147 and radiocarbon dating. We also reference preliminary data from excavations at the site (see Goodwin
148 2019) that are key to our chronological and depositional interpretations.

149 ***Coring***

150 In May 2019, we cored near the center of each known mound, which at the time included 27
151 locations. We used a JMC Environmentalist's Sub-Soil Probe PLUS, which is a slide-hammer operated
152 probe with a 91 cm (3 ft) long, 3 cm diameter collection tube, lined with copolyester tubes (Figure 3).
153 The core was placed near the center of each mound and extracted in 91 cm (3 ft) depth increments until
154 sterile sediment or the water table was reached. After each 91 cm core section was removed, the depth
155 of the perforation was measured, and a piece of brightly colored modeling clay was dropped into the
156 bottom of the hole so that wall fall could be separated out from the top of the next core. Once
157 extracted, sediment cores were measured and preliminarily described in the field. Each core liner was
158 subsequently capped and transported back to the archaeology laboratory of the Department of
159 Anthropology at the Universidad Nacional Autónoma de Honduras (UNAH), where it was split and
160 described in further detail. Charcoal samples were removed for radiocarbon dating, avoiding the
161 disturbed sections of the core. After each core was completed in the field, a 50 Lempira-cent coin was

tossed at the bottom of the core hole and then the hole was backfilled with sand in order to aid its future identification during excavation. For this study, we were interested specifically in obtaining radiocarbon dates and determining the major stratigraphic components of each mound in order to infer their function (i.e., shell mound, clay residential mound, or a combination of the two).

Radiometric dating

All charcoal samples selected for radiocarbon dating were wrapped in aluminum foil and returned to the Temple Anthropology Laboratory and Museum. Individual pieces of charcoal were chosen for analysis, favoring those that were large enough for species identification where possible (Table 2). Samples were taken from the lowest point available in each mound core, and where possible a second sample was taken from near the top of the core. Samples were sent to the Center for Applied Isotope Studies at the University of Georgia. Much of the wood that could be identified came from mangrove trees (Table 2). Although these trees live in and are partially submerged by water at the edge of the lagoon, they absorb carbon dioxide from the air and there is no need for a marine reservoir correction (Ball 1988). We were unable to recover sufficient samples for radiocarbon dating from Mounds B and K.

We also report radiocarbon dates taken from earlier excavations by Healy (Healy 1978a, 1984b) and recent excavations by Goodwin (2019). Healy reported dates from the bottom of Mound A and both top and bottom of Mounds D and I, which we have recalibrated. Goodwin also excavated at Mound I and reported three radiocarbon dates. She obtained radiocarbon dates from excavations at Mounds P and U as well. Charcoal samples for these dates were collected in situ during excavation from the top and/or bottom of primary refuse deposits. Mound I, which is the largest mound at the site, has a complicated history of both radiocarbon dating and excavations. It was dated from three different contexts—Healy’s (1978a) excavations, Goodwin’s (2019) excavations, and the coring done by this

project. While these three separate series of dates are compatible with each other, the stratigraphy of the mound is too poorly known to correlate the positions of dates among these three efforts.

Lidar data collection and processing

Airborne lidar data were collected on June 9, 2019 by the Honduran-American engineering firm ACI employing an Optech Galaxy T500 sensor mounted onboard a Cessna 206 airplane (Figure 4). The nominal flying height and ground speed were 700 m AGL and 60 m/s. The instrument was configured with a scan angle and frequency of ± 20 degrees and 82 Hz and a laser repetition frequency of 350 kHz. The combination of the above parameters yields a planned laser pulse density of 15 pulses/m² and a swath width of 500 m which were flown with a 50% overlap between adjacent swaths. The lidar data were processed at the National Center for Airborne Laser Mapping, using procedures described in detail by Fernandez-Diaz and colleagues (2014). The lidar products for the area of study were derived from 199 million laser pulses, which yielded a total of 321 million returns (1.61 returns per pulse), of which 128 million were classified as ground or close to ground (± 0.2 m) employing the Axelsson algorithm (Axelsson 2000) implemented in Terrascan. The obtained mean lidar densities per m² for the project area are: pulse 18.1, return 29.1 and ground (and close to ground) return 11.6. The ground returns were interpolated into Digital Elevation Models (DEM) employing the Kriging algorithm implemented in Golden Software Surfer at a raster spacing of 50 cm. A first surface digital elevation model (DSM) was created directly from Terrascan by triangulating the elevations from the first returns into a regular raster at a spacing of 50 cm.

The lidar DEM models were further analyzed using the Relief Visualization Toolbox (<https://iaps.zrc-sazu.si/en/rvt#v>, accessed 2/28/2020). These tools were designed specifically for the visualization of small-scale archaeological features from high-resolution lidar datasets. We focused on hillshading from multiple directions and simple local relief (SLR) models. SLR models are particularly effective for environments such as Selin Farm, where small-scale features of interest sit on a gently

sloping coastal plain (Kokalj and Hesse 2017; Kokalj and Somrak 2019). This method is a modified form of trend removal, in which larger landscape forms are smoothed using a low pass convolution filter and then removed by subtracting the smoothed DEM from the original DEM. The SLR model also removes the background landscape trend, but more effectively emphasizes small-scale features that are of interest to archaeologists (Hesse 2010). The result is a raster that looks like a DEM, but elevations are relative to the immediate surrounding space instead of a global vertical datum (Figure 5).

Mounds were delineated by extracting contours from the SLR model. Results were visually inspected for mound-like shapes—roughly circular or oblong areas at least 25 m² in area with relatively sharp relief—and then cross referenced with known maps, satellite data, and field notes. Streambeds, field boundaries or other agricultural features, and highly irregular shapes were eliminated. We estimated the volume of each mound using ArcGIS 10.5 3D Analyst tool, using the SLR model-based mound boundaries to mask areas of the DEM for measurement.

Results

Chronology

We obtained radiocarbon dates from 28 charcoal samples. Along with five samples reported by Healy (1978a) and six radiocarbon samples reported by Goodwin (2019), the Selin Farm chronology now comprises 39 radiometric dates from 25 mounds (Figure 6, Table 2). Given the scale of the Selin Farm site, these dates provide only an outline of the site's chronology, not a full picture. Moreover, most of these mounds sit in an active agricultural landscape, and therefore uppermost layers have almost certainly eroded away over the past 1000 years.

A few radiocarbon samples yielded unexpected results. The single radiocarbon date from near the bottom of Mound T calibrates to 370 – 50 cal BC (Table 2), which would make it the earliest radiocarbon date obtained for any settlement in northeastern Honduras. Surface artifacts suggest a much later date for this mound. Similarly, an early date of 50 cal BC – cal AD 230 at the base of Mound

M is out of sync with the ceramic chronology and is much earlier than the date of cal AD 685 – 885 (Table 2) from near the top of the mound. Either sample could potentially represent non-anthropogenic charcoal. However, evidence for ritual use of the nearby (~10km) Cuyamel Caves (Healy 1974) during the Cuyamel period (1000-400BCE) suggests there was likely pre-Early Selin period settlement in the area, which could be reflected in these early dates at Selin Farm.

The earliest definite construction at the site begins during the Early Selin period, when there was some activity at Mounds A, D, E, I, J, N, and P. These mounds were constructed relatively slowly, and all of them occur in the northwest area of the site (Figure 7). Construction began at Mounds C, H, L, O, and XYZ (probably a single long mound that has been artificially divided into three by archaeologists) just at the transition from the Early to Basic Selin periods, or around cal AD 600. There is a building boom shortly after this, especially in the southeast mound group where all of the mounds were built during the Basic Selin and most of them begin construction right around cal AD 650 (Figure 7, Table 2). There is still plenty of construction in the northwest mound group, though, with ongoing use of Mounds D, I, M, and O and the beginning of construction at Mound F. The occupation contracts abruptly after cal AD 750 and throughout the Transitional Selin period, with continued construction evident only at Mounds G, I, M, and O.

Mound cores and descriptions

Mound cores provided a small, minimally destructive glimpse below the surface. Mounds were constructed of either clay (n=16) or shell (n=6), except for three mounds that began as clay and transitioned to shell (Figure 2). The following descriptions combine our coring campaign with information gleaned from earlier excavations.

Clay mounds have been interpreted as foundations for wattle and daub superstructures in which daily household tasks were carried out, based on limited excavations by Healy (1978a) and Goodwin (2019). Surface assemblages for residential mounds included mostly ceramics, groundstone,

and sometimes t-shaped axes (a hoe-like tool, see Begley 1999). Evidence for superstructures, in the form of bajareque, was also sometimes present. Excavations revealing floors, hearths, and sometimes burials support the interpretation of these mounds as primarily residential in function. Long-range or linear mounds (L, O, and possibly M) appear to be preferred during later occupations of the site, as opposed to the earlier round clay mound foundations (C, E, K).

Shell mounds also include ceramics, bone, charcoal, and lithic materials, but shell provides the bulk of the structure. No evidence of floors or superstructures were found in association with these mounds during excavations or in the cores. Rapid deposition of primary refuse in these contexts is suggested by numerous refits between levels, articulated bone, whole and nearly whole pottery vessels, as well as limited evidence for exposure of these deposits to the elements (i.e., little to no sediment matrix, limited weathering, no evidence for mixing or trampling) and radiocarbon dates. Large quantities of pottery and food, particularly mangrove oysters (*Crassostrea rhizophorae*) and Caribbean crown conch (*Melongena melongena*) (Elvir 2021), a striking lack of diversity among the paste recipes identified within the pottery (Aguilera 2020), and bimodal distributions in the size of vessels, all indicate that the bulk of these deposits resulted from periodic episodes of feasting (see Goodwin 2019). The presence of ritual items such as incense burners, whistles, and lithic, shell, bone, and ceramic beads and pendants also support this interpretation. Shell mounds tended to be clustered along the eastern edge of the site core (A, D, P) or on the peripheries on the southeastern mound group (Q, R, U). The function of mounds that began as clay and transitioned to shell (C, F, G) is unclear, but the presence of censers on the surface of two out of three of these mounds suggest that at least their final phase of occupation or use was related to ritual.

Two mounds, Mounds I and H, are classified as monumental architecture. This designation was made based on size (quantified further below), shape (with visibly ramped sides), location (grouped together), and their distinct composition. Excavations in Mound I (Goodwin 2019; Healy 1978a) revealed

assemblages similar to those of shell mounds, with large quantities of shell and ceramic, but with a markedly higher ratio of sediment to artifacts. Where shell mounds often contained very little sediment, the matrix of Mound I was roughly half sediment. However, the same combination of factors – refits, articulated bone, partial vessels, limited weathering – indicated that these were the result of intentional construction and that the differences in matrices was not the result of post-depositional processes. The result of this mixture was a considerably more stable and larger mound relative to the shell mounds. In addition, an abundance of bajareque and possible post pits in this mound indicate a superstructure, which was not evident on any other shell mound. Differences in the artifact assemblages between this and other mounds also highlight its unique nature at the site. While Mound H was only excavated by Bird (Strong 1933, 1935) and his notes were lost, existing exposures from this mound and the core we obtained demonstrate a similar composition and suggest a similar function but a more limited span of use.

Lidar mapping and landscape analysis

Lidar data were collected for roughly 11 km² (1103 ha), comprising a wedge of land bounded by Guaimoreto Lagoon on the north, Trujillo Bay to the west, and the Capiro and Calentura Mountains to the south (Figure 4). No archaeological features were visible to the west of the Silin River. We focused on the area surrounding the Selin Farm site for more detailed analysis. Using the SLR model described above, we were able to identify all 27 known mounds at the Selin Farm site and 30 additional features that might be mounds (Figure 5). We continue to use Healy's (1978a) and Goodwin's (2019) letter designations for mounds that had been previously identified in the field, while we use temporary numbers for features that have been identified only via lidar and await confirmation in the field. There are two spatial clusters of mounds. The group to the northwest (Mounds A-P) have previously been referred to as "the plaza" because they seem to surround an open area, although we have recovered no

evidence so far that this area actually served as a plaza similar to those at Mesoamerican sites. We will call it the northwest group and the other (Mounds Q-AA) the southeast group.

Volume measurements vary significantly, both because of original mound size and because of the impact of modern agricultural processes. Most of the largest mounds are linear features—large clay deposits that required a lot of labor but do not stand very tall on the landscape. Mounds I (991.07 m³) and H (552.5 m³) are exceptional in this regard as in all others. These tall mounds on the northern edge of the northwest mound group (Figure 5) also have a different composition, and Mound I is the only mound with construction that continued throughout the entire span of Selin Farm's occupation. Some of the lowest volume mounds are hardly visible on the landscape and were identified in the field because of the artifact scatters associated with them. Some of the larger round shell mounds, such as P, Q, R, and U, have been less affected by recent plowing, in part because of their height and in part because such dense shell deposits do not create good agricultural conditions.

Possible new mounds

The lidar analysis shows a total of 30 features that could be additional mounds, some within the existing bounds of the Selin Farm site and some that might form new sites (Figure 5). Several processes may have created features that look like mounds, but either are not anthropogenic or are the result of much more recent activity. In vegetated areas, large tree falls can collect sediment and form mound-like structures, while decades of intensive agriculture in more open areas have obscured mound boundaries, reduced the height of some mounds, and scattered artifacts across the surface. In the northwest mound group, features 1-6 (Figure 5) are under dense vegetation and, although they are relatively large (Table 3), it is not surprising that they have not been identified during fieldwork. We have not always been able to relocate Mound L, which is in the same area as possible features 3-6. We were also unable to reach the locations of features 1 and 2 because of dense vegetation, even though they are in a very narrow strip of forest between two cleared fields. Feature 1 is particularly exciting because it might form a

double feature with Mound D, similar to Mounds H and I. Other features within the northwest mound group are out in the open but are not distinct when viewed from the ground. For example, on the ground features 18 –22 (Figure 5) look like indistinct undulations covered in a continuous scatter of artifacts. Feature 18 corresponds with a shell scatter that we have previously noted to the west of Mound G, while features 21 and 22 join with Mounds K, J, and E to form a low ridge that cuts east to west across the center of the northwest mound group (Figure 5).

In the southeast mound group, new features are concentrated along the eastern edge (features 23-30 on Figure 5). Although these low rises are not evident in the field, they are associated with mapped surface artifact clusters and may represent the remains of mounds or other activity areas that have been eroded through time. Similarly, feature 10 has been previously identified in the field as a distinct artifact cluster separated from the main part of the Selin Farm site, although the height of the mound was not evident in the field. For all of these low features, we will need to take cores and determine whether they correspond with artifact scatters before deciding if they are mounds or activity areas.

Further outside the known boundaries of the Selin Farm site, there are a number of features that might be additional mounds. To the north of the site, there are several mound-like features that, if confirmed as mounds, could represent a more expanded occupation of Selin Farm (features 7-9 in Figure 5). These features, however, are tall and narrow, not particularly similar to any of the known mounds (Table 1 and Table 3). Dense vegetation and the proximity to the Selin River suggest that these features could be non-anthropogenic, the result of floodplain activity or tree falls. To the southwest of the site, however, are several larger features that are likely mounds (features 11-17 on Figure 5). Features 11 and 12 are within an old bend of the Silin River and are similar in size and shape to Mounds B and S at the Selin Farm site (Table 1 and Table 3). Features 14 and 16 are similar in size and shape to Mounds R and U at Selin Farm. Feature 17 is the only one of these features that is in an agricultural field rather than

under dense vegetation, and its large base and low height make it dissimilar to any of the Selin Farm mounds. Based on location, features 14-17 might correspond to site H-CN-19 in Healy's (1978a, 1978b, 1978c, 1984b) early survey maps, but any further information about these features is lacking in published literature. In any case, they appear to be distinct from the Selin Farm site.

There were no other potential mound features evident in the area of the lidar survey (Figure 4). In addition to the mounds and possible mounds presented in Figure 5, other visible features include possible canals, especially running east-west to the south of the site. Future research will help determine the sedimentology and age of these intriguing features.

Discussion

Data collected through lidar, radiocarbon dating, and coring provide information about mound variability along four axes: the spatial distribution of mounds, the timing and duration of their construction, construction materials, and size and shape. Patterns in the variability and relationships among these factors show how people at Selin Farm shifted their use of the landscape through time, and how that use of the landscape reflects broader social trends throughout the Selin period.

Healy's (1978a) excavations suggested that clay mounds at Selin Farm were used as architectural features while shell mounds were primarily refuse deposits (Figure 2), and Goodwin's (2019) work generally confirmed this dichotomy. In fact, clay mounds that have been excavated contain multiple stratified hard packed earth floors and hearths (Healy 1978a), suggesting that the process of building the mounds was ongoing even while they were functioning as house platforms. House mounds were not simply built and refreshed as needed, but they grew taller over the course of multiple centuries. Goodwin's (2019) excavations at Mounds P and U, however, indicated that shell mounds were more than just refuse deposits. Dense shell deposits with almost no sediment, alternating lenses of shell, pottery, and other material, and the presence of ritual artifacts all suggest that some of these features were the result of feasting (Figure 2).

Our research confirms the uniqueness of Mounds H and I, sitting adjacent to each other in the northeast corner of the northwestern mound group (Figure 5). Individually, they are each taller and greater in volume than any other mound (Table 1), but they are also connected via a low saddle, suggesting that they may have been closely associated or even part of the same structure for the people who built them. While the lowest ~1 m of Mound I is made of clay, the rest of Mound I and all of Mound H is made of a mixture of clay, shell, and sediment. This mixture appears to have made the mounds more stable. Excavations at Mound I suggest that it might have served as a platform for some form of architecture, based on the presence of bajareque throughout the excavation and a possible post pit during the final phase of use (Goodwin 2019).

Early Selin Period (AD 300-600)

Although earlier radiocarbon dates from the base of Mounds M and T might indicate some pre-Selin period activity at Selin Farm, mound construction gets fully underway during the Early Selin period. All construction during this period occurs in the northwest mound group, including three shell mounds (A, D, and P) and five clay mounds (C, G, I, J, and N). Although Mound I later becomes a mix of clay and shell, the base of the mound that was built during the Early and Basic Selin is made of clay (Figure 7).

Mounds were very widely dispersed during the Early Selin period, with about 300 m separating Mounds P and I (Figure 7). Aside from adjacent Mounds H and I, no two mounds under active construction are less than about 40 m apart. Construction at Mounds H and I probably began around the same time during the Early Selin period, ~AD 450, but while construction at Mound I continued for the next 600 years, Mound H was fully constructed over the course of about 200 years (Figure 6, Table 2). The lower ~1 m of the center of Mound I, which was constructed alongside Mound H during the Early Selin period, is made primarily of clay, while the contemporary part of Mound H contains a mixture of sediment, clay, and shell. While their proximity suggests that Mounds H and I were closely associated during the Early Selin, they likely served different purposes at that time. It is likely that the Early Selin

portion of Mound I supported a structure, like other clay mounds, while Mound H served as a place for trash deposition, but both their size and proximity set them apart among other Early or Basic Selin mounds at the site.

Overall, the slower pace of construction, the distance between mounds, and the very loose association among all of the mounds suggests a relatively low-intensity occupation during the Early Selin period, reflecting a minimal cultural commitment to large-scale construction and perhaps village life more generally.

Basic Selin Period (AD 600-800)

This slow pace of growth changes significantly during the Basic Selin period with an explosion of mound building. First, all of the construction and use of mounds in the southeast group occurs during the Basic Selin period, and radiocarbon dates suggest that it happens almost synchronously and very quickly (Figure 6, Table 2). The earliest dates from Mounds Y and Z join with those from northwestern group Mounds C, L, and O to form a cluster of dates from about cal AD 550 to 650 (Table 2). The earliest dates from Mounds Q, R, U, V, W, X, and AA, all in the southeastern group are virtually identical, with calibrated ranges between cal AD 660-760. The earliest dates from the remaining southeastern group Mounds S and AA are only very slightly earlier, around cal AD 620-700 (Figure 6, Table 2). Thus, construction began during the Basic Selin for 15 of the 25 dated mounds. For most of these mounds, construction was completed very quickly. We obtained top and bottom dates at Mounds H, I, M, O, P, Q, and U. Of these, the top and bottom dates at Mound U (203.91 m³) were identical, and top and bottom dates at Mound Q (154 m³) differed by only 10 radiocarbon years. Mounds H (462.03 m³) and O (307.68 m³), the second and third largest by volume at the entire site, were each constructed over a period of about 200 years.

While more people put in more effort to build mounds during the Basic Selin, there is still no apparent spatial structure to how those mounds are located, contrasting sharply with Mesoamerican

patterns of site development. Most of the low, linear clay features (Mounds L, O, and X/Y/Z) were constructed during the Basic Selin. Mound M, which appears to be two low clay mounds connected by a saddle today, was likely a similar structure in the past, so that Mounds L, M, and O formed a series of these low clay house mounds along the western edge of the site. These may have contrasted with the tall shell Mounds H and I, both of which were still under construction. Although more complete depositional models are needed for each mound, we expect that Mound I caught up in height to Mound H early during the Basic Selin, and it also transitioned to a similar mix of shell and sediment. Based on position, timing, and composition, it is possible that Mounds H and I formed a pair of shell and clay mounds during the Early Selin, but that during the Basic Selin the dichotomy instead was between H/I as a single unit of shell mounds paired with clay residential Mounds L, M, and O. Together, we hypothesize that these mounds formed a cluster of quasi-elite residential and public spaces at the height of Selin Farm's occupation. Mound D is the only true shell mound currently known from the Basic Selin in the northwestern mound group.

Early Selin Mounds N, J, C, E, A, and P did not disappear from the landscape after construction stopped (Figure 7)—they would have been notable features for the Basic Selin occupants of Selin Farm and reminders of the persistent importance of this location (*sensu* Hendon 2010; Joyce 2004). Because of the dense shell composition of Mound P, recent farmers have avoided plowing it and it remains a very distinctive feature on the landscape, standing about 1.4 m above the surrounding field. Before 20th century plowing, it is likely that other mounds would have been similar, standing as monuments to the past even after they were no longer in use.

In the southeastern mound group where there were no existing mounds on the landscape when the Basic Selin building blitz began, there is still limited structure or organization evident. Several clay residential mounds (AA, XYZ, W, V, and T) are loosely grouped with shell Mounds Q, R, and U around the perimeter, but it is not clear if this grouping is meaningful or coincidental (Figure 5). The Basic Selin,

then, represents a significant increase in the quantity of labor put into creating mounds, likely reflecting an increased population at the site and throughout the region. The ability of some inhabitants to call on excess labor and the expansion from the site core to the southeast at this time may also indicate shifts in local power dynamics. The abruptness of construction during the Basic Selin and the speed at which it is completed suggests that the people at Selin Farm had a new motivation for creating these features. This coincides with increasing populations and degrees of social inequality evident in northeastern Honduras generally (Healy 1984a, 1984b). The rapid growth at Selin Farm, therefore, likely relates to the activities of emergent elite segments of the community, who may have found the richness of the Guaimoreto Lagoon ecosystem to be a high-quality incubator for experimenting with social complexity.

The timing of this period of rapid construction ~AD 600 – 700 at Selin Farm is particularly interesting within the broader context of northeastern Honduras and southern Mesoamerica. In the lower Ulua Valley to the west, contemporary societies were undergoing similar processes of complexification and increasing social inequality, but along very different lines than the highly codified ritual nobility that existed in Maya societies (e.g., Joyce 2021, Webster 1999). Changes in northeastern Honduras appear to be even more disconnected from Classic Maya societies, with limited architectural or iconographic references to Maya culture. While a more in-depth comparison awaits full analysis of the ceramic data, the Selin Farm settlement patterns share many features of what has been described as heterarchical social organization (see Joyce 2021 for a summary of this work in Southeastern Mesoamerica), including an emphasis on craft production with little apparent restriction to its distribution and use. Continued use of public spaces and features like Mound I suggests that community cohesion was of central concern to residents of Selin Farm. On the other hand, the physical separation of the “old” northwest group and the “new” southeast group could indicate a separation or even competition between different groups of people rather than a hierarchical order (Clark and Blake 1992; Healy 1992; Hoopes 1996; Urban and Schortman 2004).

Equally important, the central role of aquatic resources in feasting, the remains of which became the shell mounds at the site, highlights the importance of these resources and their waterscapes (Swyngedouw 1999). Water and water-borne resources are both represented in the ceramic iconography of the region, highlighting the importance of the connection between place, action, and community for the inhabitants of the site (see Joyce et al. 2009; Lopiparo 2003, 2006, 2007).

Transitional Selin Period

If Selin Farm served as an experiment in social complexity within a rich environment, it appears to have met with only limited success. Activity at the site constricted significantly and abruptly during the Transitional Selin, with construction continuing only at a few mounds near the original core in the northern part of the northwestern mound group. The limited construction that did occur focused on areas with the deepest connections to the past (Figure 7). Clay Mounds M and O were presumably residential features, serving as platforms for houses. Unlike the rest of the site, construction at Mound I continued to advance rapidly during the Transitional Selin, resulting in a mound that was over 4 m in height, with ramped sides leading up to a wattle and daub structure at the summit. It stood out relative to all other mounds at the site more than in previous phases and, with a new walled structure, signaled increasingly restricted access to this ritual space.

Whether the remaining site residents were the original Selin Farm emergent elites or not, those who stayed at the site positioned themselves in such a way to identify with the elite past. The limited number of residential structures and their position on the landscape suggests that remaining households were those with a privileged relationship to Mound I. Similarities between the assemblages of Mound I and Mound O at this time support this connection, with both contexts demonstrating a new suite of ritual items that emphasize new styles and intraregional connections that expanded in the following centuries (Goodwin 2019). The elite status of those who remained may have been somewhat hollow, given the lack of other residents at the site, but they nonetheless served as a connection

between the site's past glory and the new values and connections emerging within northeastern Honduras. These structures both reflected and contributed to the importance of the local landscape – with the largest mounds at the site sitting near the edge of the lagoon in what might reflect a recreation of natural topography of the mountains visible from the lagoon (*sensu* Luke 2012). That these mounds were created by layering iconographically rich ceramic materials – rife with representations of the lagoon's natural resources – with an abundance of the physical remains of those very resources was certainly not without symbolic significance.

While the rapidity of the decline and abandonment of Selin Farm suggests a dramatic cause for such vulnerability, research so far has been unable to pinpoint whether that cause was environmental, cultural, or, more likely, a combination of the two. Broad cultural and political shifts occurred throughout Mesoamerica and Central America during the Classic to Postclassic shift, including in nearby Ulua and Naco valleys, and local populations appear to have shifted their networks south as part of their response to these changes (Healy 1984a, 1984b). Broader changes in the political and social structure of northeastern Honduras almost certainly contributed, but the sheer quantity of resources consumed at the site and left behind in shell mounds (Table 3) also might point towards an ecologically unsustainable system. The scale of this 'collapse', however, deserves careful consideration, whether it was social, ecological, or both. While Selin Farm itself was abandoned, the large, centralized sites of the Early Cocal (AD 1000-1200), also situated in proximity to the lagoon, suggest that local socio-ecological systems may have been resilient at a higher level. This stands in stark contrast to a noted lull in large settlements in nearby valleys during the early Postclassic period (e.g., El Cajon, see Hirth et al. 1989; Naco, see Schortman and Urban 2012).

Conclusion

The detailed spatial and chronological information presented here has transformed our understanding of the Selin Farm site. It is now clear that something remarkable happened at the

beginning of the Basic Selin period around AD 600, with an abrupt increase in mound building and an equally abrupt expansion into the southeast section of the site, even while construction continued in the the northwest section. Large quantities of fish, shellfish, and land animals were consumed and deposited over very short periods of time—instantly from an archaeological perspective, although years or perhaps decades might have actually passed. An even more dramatic decline occurred within just two centuries, as moundbuilding ceased everywhere except the northernmost part of the northwest mound group.

Throughout this time, there is very little apparent structure or organization to the distribution of mounds across the landscape, demonstrating that the people at Selin Farm were not copying the site plans of their Mesoamerican neighbors any more than they were incorporating their architectural styles or food production systems. This is a decidedly different, locally-centered, cultural system in which people came together and built mounds to raise the dwellings of some members of society and, over centuries, construct the first monumental structures in northeastern Honduras. This implies the beginnings of the social inequality that would become much more prominent in the region after the abandonment of Selin Farm.

These developments might reflect increasing heterarchical diversity, as seen along other areas of the Southeastern Mesoamerican border (e.g., Hendon 2010; Joyce and Hendon 2000; Joyce et al. 2009; Lopiparo 2007) or they might reflect new processes of centralization related to hierarchy building. Although a full analysis of heterarchy versus hierarchy would be improved by regional datasets for the Aguan Valley (see Sharer et al. 2009), the emphasis on ritual, spirituality, and skilled but apparently unrestricted craft production and consumption at the site of Selin Farm (see Goodwin 2019) and the absence of any evidence of overt control of local or nonlocal resources (i.e., extremely limited importation of obsidian) suggest some ways in which local heterogeneity was encouraged and maintained. This is in line with other groups along this border, who borrowed, rejected, and adapted

models from each other and from the larger, more 'complex' (as traditionally defined) societies to the north (see Joyce 2021; Schortman and Urban 2021).

While our analysis of data from lidar and coring focuses on landscape, it is clear that people at Selin Farm were at least equally focused on their waterscape. The site itself is surrounded by water on three sides, resources are dominated by plants and animals obtained from the water, and iconography indicates that water—and Guaimoreto Lagoon in particular—was central to the Selin worldview. Future research will focus more specifically on the technology, subsistence, feasting, and ideology that structured the relationship between Selin Farm residents and their waterscape.

As is common with this type of exploratory research, we have collected more questions than answers for the Selin Farm site. We are, however, in a better position to start developing hypotheses and strategies for answering those questions. Forthcoming research will describe excavations at Mounds I, P, Q, and U, with a focus on questions about changing ecology and landscape use, food acquisition and production, increasing sociopolitical and ritual complexity, and the relationship of Selin Farm to societies in Mesoamerica and lower Central America. The chronological and spatial frameworks developed here will be essential to accurate interpretation of these ecological and anthropological questions.

References

- Aguilera, M. 2020. *Análisis de la Producción Cerámica del Montículos P y U del Sitio Arqueológico Selin Farm, Trujillo, Honduras*. Undergraduate Thesis, National Autonomous University of Honduras, Tegucigalpa, Honduras.
- Axelsson, P. 2000. "DEM generation from laser scanner data using adaptive TIN models." *International Archives of Photogrammetry and Remote Sensing* 33, 111–118.
- Ball, M. C. 1988. "Ecophysiology of mangroves." *Trees* 2, 129–142.
- Begley, C. T. 1999. *Elite Power Strategies and External Connections in Ancient Eastern Honduras*. Ph.D. dissertation, University of Chicago.
- Begley, C. T. 2021. "Ancient Mosquito coast: why only certain material culture was adopted from outsiders." In W. Goodwin, A. Figueroa, and E. Johnson, eds., *Southeastern Mesoamerica: Indigenous Interactions, Resilience, and Change*. Boulder: University Press of Colorado, 157-178.
- Brady, J. E., C. T. Begley, J. Fogarty, D. J. Stierman, B. A. Luke, and A. Scott. 2000. "Talgua archaeological project: a preliminary assessment." *Mexicon* 22, 111-118.
- Bronk Ramsey, C. 2009. "Bayesian analysis of radiocarbon dates." *Radiocarbon* 51, 337–360.
- Clark, J. E., and M. Blake. 1994. "The power of prestige: Competitive generosity and the emergence of rank societies in lowland Mesoamerica." In E. Brumfiel, ed., *Factional Competition and Political Development in the New World*. Cambridge, U.K.: Cambridge University Press, 258-281.
- Cuddy, T. W. 2007. *Political Identity and Archaeology in Northeast Honduras*. Boulder: University Press of Colorado.
- Davidson, W. V. 1991 "Geographical Perspectives on Spanish-Pech (Paya) Indian Relationships in Sixteenth Century Northeast Honduras". In D. Hurst Thomas, ed., *Columbian Consequences*. Washington, DC: Smithsonian Institution Press, 205-226.

583 Dennett, C. L. 2007. *The Rio Claro Site (AD 1000-1530), Northeast Honduras: A Ceramic Classification and*
584 *Examination of External Connections*. M.A. Thesis, Trent University, Peterborough, Ontario.

585 Elvir, W. 2021. *Relaciones Sociales y Medioambientales en Selin Farm a través del Análisis de su Conjunto*
586 *Arqueomalacológico*. Undergraduate Thesis, Universidad Nacional Autónoma de Honduras,
587 Tegucigalpa, Honduras.

588 Epstein, J. F. 1957. *Late ceramic horizons in northeastern Honduras*. Ph.D. dissertation, University of
589 Pennsylvania, Philadelphia.

590 Fernandez-Diaz, J. C., W. E. Carter, R. L. Shrestha, and C. L. Glennie. 2014. "Now you see it... now you
591 don't: understanding airborne mapping LiDAR collection and data product generation for
592 archaeological research in Mesoamerica." *Remote Sensing* 6, 9951–10001.

593 Fowler, W. R., editor. 1991. *The Formation of Complex Society in Southeastern Mesoamerica*. Boca
594 Raton: CRC Press.

595 Goodwin, W. A. 2019. *Communities of consumption on the southeastern Mesoamerican border: Style,*
596 *feasting, and identity negotiation in prehispanic northeastern Honduras*. Ph.D. dissertation,
597 Southern Methodist University, Dallas, TX.

598 Goodwin, W. A., A. J. Figueroa, and E. Johnson. 2021. "Introduction". In W. Goodwin, A. Figueroa, and E.
599 Johnson, eds., *Southeastern Mesoamerica: Indigenous Interactions, Resilience, and Change*. Boulder:
600 University Press of Colorado, 1-26.

601 Graham, M. M., editor. 1993. *Reinterpreting the Prehistory of Central America*. Niwot: University Press
602 of Colorado.

603 Griffin, W., H. Martínez Escobar, and J. C. Hernández Torres. 2009. *Los Pech de Honduras: Una etnia que*
604 *vive*. Tegucigalpa, Honduras: Instituto Hondureño de Antropología e Historia,

605 Healy, P. F. 1974. "The Cuyamel Caves: Preclassic Sites in Northeast Honduras." *American Antiquity* 39,
606 435-447.

607 Healy, P. F. 1975. "The H-CN-4 (Williams Ranch) site: preliminary report on a Selin Period site in
608 Northeast Honduras." *Vinculos* 1, 61–71.

609 Healy, P. F. 1978a. "Excavations at the Selin Farm Site (H-CN-5), Colon, Northeast Honduras." *Vinculos* 4,
610 57–79.

611 Healy, P. F. 1978b. "Excavations at Rio Claro, northeast Honduras: preliminary report." *Journal of Field*
612 *Archaeology* 5, 15–28.

613 Healy, P. F. 1978c. *La arqueología del noreste de Honduras: Informe preliminar de la investigación de*
614 *1975 y 1976*. Report on file, Instituto Hondureño de Antropología e Historia, Tegucigalpa, Honduras.

615 Healy, P. F. 1983. "The paleoecology of the Selin Farm site (H-CN-5), Department of Colon, Honduras." In
616 R. M. Leventhal and A. L. Kolata, eds., *Civilization in the Ancient Americas*. Cambridge, MA: Peabody
617 Museum of Archaeology and Ethnology, 35–54.

618 Healy, P. F. 1984a. "Northeast Honduras: a Precolumbian frontier zone." In F. W. Lange, ed., *Recent*
619 *Developments in Isthmian Archaeology: Advances in the Prehistory of Lower Central America*.
620 Oxford: B.A.R. International Series, 227-241

621 Healy, P. F. 1984b. "The prehistory of Northeast Honduras: cultural change on a Pre-Columbian
622 Mesoamerican frontier." *National Geographic Society Research Reports* 16, 339–358.

623 Healy, P. F. 1992. "Ancient Honduras: Power, Wealth and Rank in Early Chiefdoms." In F. W. Lange, ed.,
624 *Wealth and Hierarchy in the Intermediate Area*. Washington, D.C.: Dumbarton Oaks, 85-108.

625 Healy, P. F. 1993. "Northeastern Honduras." In J. S. Henderson and M. Beaudry-Corbett, eds., *Pottery of*
626 *Prehistoric Honduras: Regional Classification and Analysis*. Los Angeles: Cotsen Institute of
627 Archaeology, University of California, 194–213.

628 Henderson, J. S. and K. M. Hudson. 2015. "The myth of the Maya: archaeology and the construction of
629 Mesoamerican identities." In H. Kettunen and C. Helmke, eds., *On Methods: How We Know What*

630 *We Think We Know about the Maya*. Acta Mesoamericana, vol. 28. Munich: Verlag Anton Saurwein,
631 7-24.

632 Hendon, J. A. 2010. *Houses in a Landscape: Memory and Everyday Life in Mesoamerica*. Durham, N.C.:
633 Duke University Press.

634 Hendon, J. A., R. A. Joyce, and J. Lopiparo. 2013. *Material Relations: The Marriage Figurines of*
635 *Prehispanic Honduras*. Boulder: University Press of Colorado.

636 Hesse, R. 2010. "LiDAR-derived Local Relief Models—a new tool for archaeological prospection."
637 *Archaeological Prospection* 17, 67–72.

638 Hirth, K., G. Lara Pinto, and G. Hasemann, editors. 1989. *Archaeological Research in the El Cajón Region*.
639 Tegucigalpa, Honduras: Instituto Hondureño de Antropología e Historia.

640 Hoopes, J. W. 1996. "Settlement, subsistence, and the origins of social complexity in Greater Chiriquí: A
641 reappraisal of the Aguas Buenas tradition." In F. W. Lange, ed., *Paths to Central American Prehistory*.
642 Niwot, CO: University Press of Colorado, 15-48.

643 Instituto Nacional de Conservación y Desarrollo Forestal, Áreas Protegidas y Vida Silvestre (ICF). 2012.
644 *Diagnóstico Biofísico, Socio-económico y Proceso de Declaratoria de la Laguna de Guaimoreto*.
645 Tegucigalpa, Honduras: Instituto Nacional de Conservación y Desarrollo Forestal, Áreas Protegidas y
646 Vida Silvestre.

647 Joyce, R. A. 1986. "Terminal Classic interaction on the southeastern Maya periphery". *American*
648 *Antiquity* 51, 313-329.

649 Joyce, R. A. 2004. "Unintended consequences? Monumentality as a novel experience in Formative
650 Mesoamerica". *Journal of Archaeological Method and Theory* 11, 5-29.

651 Joyce, R. A. 2014. *Cerro Palenque: Power and Identity on the Maya Periphery*. Austin: University of Texas
652 Press.

653 Joyce, R. A., and J. A. Hendon. 2000. "Heterarchy, History, and Material Reality: 'Communities' in Late
654 Classic Honduras". In M. Canuto and J. Yaeger, eds., *The Archaeology of Communities: A New World*
655 *Perspective*. London: Routledge, 143–159.

656 Joyce, R. A., J. A. Hendon, and J. Lopiparo. 2009. "Being in Place: Intersections of Identity and Experience
657 on the Honduran Landscape". In B. J. Bowser and M. Nieves Zedeño, eds., *The Archaeology of*
658 *Meaningful Places*. Salt Lake City: University of Utah Press, 53–72.

659 Joyce, R. A. 2021. "An Alternative Framework for Honduran Archaeology". In W. Goodwin, A. Figueroa,
660 and E. Johnson, eds., *Southeastern Mesoamerica: Indigenous Interactions, Resilience, and Change*.
661 Boulder: University Press of Colorado, 295-316.

662 Kokalj, Ž., and R. Hesse. 2017. *Airborne Laser Scanning Raster Data Visualization: A Guide to Good*
663 *Practice*. Ljubljana, Slovenia: Založba ZRC.

664 Kokalj, Ž., and M. Somrak. 2019. "Why not a single image? Combining visualizations to facilitate
665 fieldwork and on-screen mapping." *Remote Sensing* 11, 747, doi.org/10.3390/rs11070747.

666 Lara Pinto, G. 1991 "Change for Survival: The Case of the Sixteenth-Century Indigenous Populations of
667 Northeast and Mideast Honduras". In D. H. Thomas, ed., *Columbian Consequences, Vol 3: The*
668 *Spanish Borderlands in Pan-American Perspective*. Washington, DC: Smithsonian Institution Press,
669 227-243.

670 Lopiparo, J. 2003. *Household Ceramic Production and the Crafting of Society in the Terminal Classic Ulua*
671 *Valley, Honduras*. Ph.D. Dissertation, University of California, Berkeley.

672 Lopiparo, J. 2006. "Crafting children: materiality, social memory, and the reproduction of Terminal
673 Classic house societies in the Ulúa Valley, Honduras." In T. Ardren and S. R. Hutson, eds., *The Social*
674 *Experience of Childhood in Ancient Mesoamerica*. Boulder: University of Colorado Press, 133-168.

675 Lopiparo, J. 2007. "House societies and heterarchy in the Terminal Classic Ulua Valley, Honduras". In R.
 676 A. Beck, ed., *The Durable House: House Society Models in Archaeology*. Carbondale: Southern Illinois
 677 University, 73–96.

678 Luke, C. 2012. "Materiality and Sacred Landscapes: Ulúa Style Marble Vases in Honduras". In Y. Rowan,
 679 ed., *Beyond Belief: The Archaeology of Ritual and Religion*. Arlington: American Anthropological
 680 Association, 114–129.

681 Newsom, L. 1986. *The Cost of Conquest: Indian Decline in Honduras under Spanish Rule*. Boulder:
 682 Westview Press.

683 Reimer, P., Austin, W., Bard, E., Bayliss, A., Blackwell, P., Bronk Ramsey, C., Butzin, M., Cheng, H.,
 684 Edwards, R., Friedrich, M., Grootes, P., Guilderson, T., Hajdas, I., Heaton, T., Hogg, A., Hughen, K.,
 685 Kromer, B., Manning, S., Muscheler, R., Palmer, J., Pearson, C., van der Plicht, J., Reimer, R.,
 686 Richards, D., Scott, E., Southon, J., Turney, C., Wacker, L., Adolphi, F., Büntgen, U., Capano, M.,
 687 Fahrni, S., Fogtmann-Schulz, A., Friedrich, R., Köhler, P., Kudsk, S., Miyake, F., Olsen, J., Reinig, F.,
 688 Sakamoto, M., Sookdeo, A., and Talamo, S. 2020. "The IntCal20 Northern Hemisphere radiocarbon
 689 age calibration curve (0–55 cal kBP)." *Radiocarbon*, 62, 725-757.

690 Rivera, A., J. San Martin, and P. Guardiola. 2019. *Diagnóstico Situacional De La Pesca Artesanal En Los*
 691 *Municipios De Trujillo Y Santa Fe*. Reporto n file with CORAL-GOAL, Trujillo, Colon, Honduras.

692 Rodríguez, A. 2018. *Estudios de linea base de ecosistemas marinos de la Bahia de Trujillo 2014-2018*.
 693 Report on file with the Universidad Nacional Autonoma de Honduras, Tegucigalpa, Honduras.

694 Schortman, E. M., and P. A. Urban. 1994. "Living on the edge: core/periphery relations in ancient
 695 southeastern Mesoamerica." *Current Anthropology* 35, 401-430.

696 Schortman, E. M., and P. A. Urban. 2011. "Power, memory, and prehistory: constructing and erasing
 697 political landscapes in the Naco Valley, northwestern Honduras". *American Anthropologist* 113, 5-
 698 21.

699 Schortman, E. M., and P. A. Urban. 2012. *Archaeological Theory in Practice*. Walnut Creek, CA: Left Coast
700 Press.

701 Schortman, E. M., and P. A. Urban. 2021. "Sociopolitical Dynamism, Fluidity, and Fragmentation in
702 Southeast Mesoamerica". In W. Goodwin, A. Figueroa, and E. Johnson, eds., *Southeastern*
703 *Mesoamerica: Indigenous Interactions, Resilience, and Change*, Boulder: University Press of
704 Colorado, 317-334.

705 Sharer, R. J., D. W. Sedat, and A. Pezzati. 2009. "Sitios arqueológicos en la Costa Norte de Honduras."
706 *Yaxkin* 25, 73–91.

707 Spinden, H. J. 1925. "The Chorotegan culture area." In *Proceedings of the International Congress of*
708 *Americanists, 21st Session, 1924-1925, Vol 2*. Nendeln, Liechtenstein: Kraus Reprint.

709 Stone, D. 1941. *Archaeology of the North Coast of Honduras*. Peabody Museum of Archaeology and
710 Ethnology, Memoir 9(1). Cambridge, MA: Peabody Museum.

711 Strong, W. D. 1933. *Honduras Expedition, Jan 28-July 17, 1933*. Washington D.C.: Smithsonian
712 Institution.

713 Strong, W. D. 1935. *Archaeological investigations in the Bay Islands, Spanish Honduras*. Smithsonian
714 Institution Miscellaneous Collection 92(14). Washington D.C.: Smithsonian Institution.

715 Swyngedouw, E. 1999. "Modernity and hybridity: nature, regeneracionismo, and the production of the
716 Spanish waterscape, 1890–1930". *Annals of the association of American Geographers* 89, 443-465.

717 Urban, P. A., and E. M. Schortman. 2004. "Opportunities for advancement: Intra-community power
718 contests in the midst of political decentralization in Terminal Classic Southeastern Mesoamerica."
719 *Latin American Antiquity* 15, 251-272.

720 Webster, David. 1999. "The archaeology of Copan, Honduras." *Journal of Archaeological Research* 7, 1-
721 53.

722

Figure Captions

Figure 1. A: The Northeastern Honduras region, comprising the departments of Bay Islands, Colon, Gracias a Dios, and Olancho, is shaded in dark gray. B: Map of Guaimoreto Lagoon and Selin Farm site, along with nearby rivers and the modern towns of Trujillo, Puerto Castilla, and Santa Rosa de Aguan. C: Regional chronology, following Healy (1984a).

Figure 2. Photos from excavations of clay (left, 2m depth) and shell (right, 2.5m depth) mounds at Selin Farm. Shell mounds excavated so far are densely packed accumulations of shell, ceramic, and bone. Clay mounds, on the other hand, contain very few artifacts. Photographer: Whitney Goodwin.

Figure 3. Husni Abdala, Hansel Rosales, and Mauricio Rodríguez, anthropology students from the Universidad Nacional Autónoma de Honduras, working with the JMC coring device at Mound P (top) and Mound I (bottom). Photographer: Alejandro Figueroa.

Figure 4. Shaded relief map from the lidar DEM for the entire data extent. The area singled out for more detailed analysis in this study is highlighted in red.

Figure 5. Feature identification using a simple local relief model visualization derived from the DEM. Features labeled with a letter are previously identified mounds, while those labeled with numbers are possible mounds that need to be confirmed in the field.

Figure 6. Probability distribution models for each date at Selin Farm as they relate to the regional ceramic chronology, including the Cuyamel period (~1200-300 BC), the Early Selin (AD 300-600), Basic Selin (AD 600-800), and Transitional Selin (AD 800-1000). Radiocarbon dates were calibrated using OxCal

747 4.4 (Bronk Ramsey 2009) using the Intcal20 (Reimer et al. 2020) curve. White probability distribution
748 curves represent clay mounds, while black represent shell mounds and stripes represent mounds of
749 mixed shell and clay.

750

751 Figure 7. Series of maps showing change through time at the site, including the location and
752 construction material of each mound.