Identifying the Early Use of Coastal Fisheries and the Rise of Social Complexity in Shell Rings and Arcuate Middens on Florida's Northeast Coast

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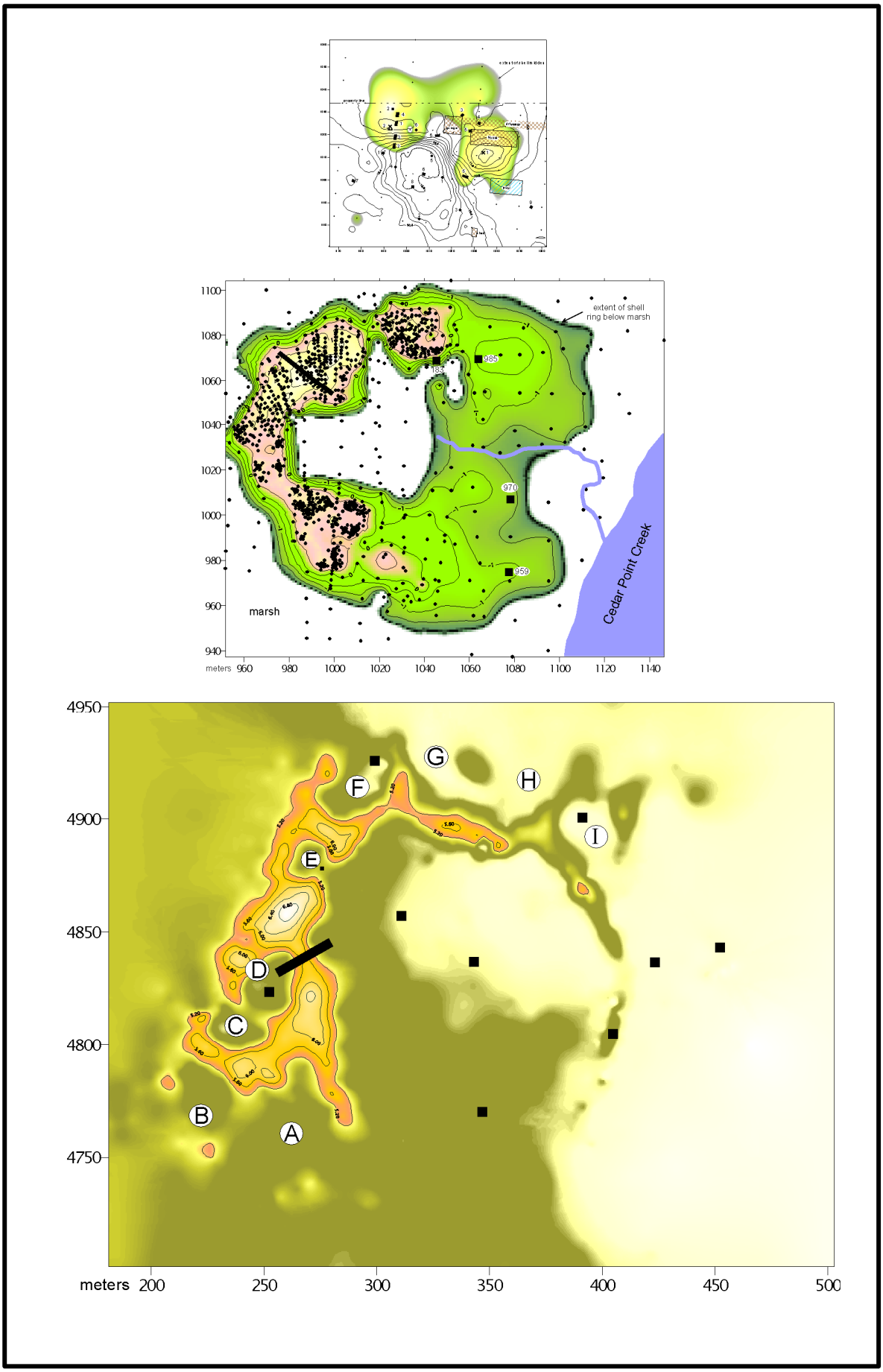

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Michael Russo and Rebecca Saunders
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Abstract
This project set out to achieve two specific research goals through a number of methodologies: to determine if the three shell sites were true "rings;" and to determine the function of the sites – secular vs. sacred, utilitarian vs. ritual, egalitarian vs. ranked social organization. To reach these goals, we produced transit contour maps of the sites and initiated excavations to determine cultural contexts, faunal analyses that identified seasons of occupation and species exploited, and soils analyses to identify intra-site usage patterns. From these we have obtained new insights into site function and periods of occupations for early coastal cultures in North America.

Spencer's Midden

To begin with, we found that the oldest and smallest site, Spencer's Midden is aptly named. It is strictly a shell midden rather than a shell ring. Its half circle shape is attributable to its placement on top of a relict parabolic sand dune encircling a depression, formally a pond or spring. Only the north and northeastern portion of the parabola contains shell midden remains (Figure 1) and soils analyses (Scudder 1999) revealed that the remaining portions of the circle were never overlain by a shell or earth midden.

Though Spencer’s is not a ring site, it is critically important to our understanding of the initial settlement of the Atlantic coast. Radiocarbon dates indicate that the site was occupied between 5,700 and 5,500 years ago, making it the oldest known coastal shell midden on the U.S. Atlantic coast. Prior to the discovery of this site, the earliest occupations dated to 4,000 years ago. Archaeologists speculated that earlier people in the region were hunter-gatherers, not fishers; they had assumed that the technology for exploiting, as well as the coastal fisheries themselves, remained undeveloped. The studies at Spencer's Midden dispel this notion. The coastal resources exploited in great abundance were the same kind exploited 1700 years later at Rollins Shell Ring and other Late Archaic sites. Differences in subsistence and settlement did exist, however. At Spencer's, evidence of the long Archaic terrestrial hunting tradition was left behind in the form of numerous deer bones and the projectile points and debitage —more lithics were found at Spencer’s than at the other study sites combined. Nevertheless, oyster, coquina, and small schooling fish such as herrings and menhaden, as well as larger catfish, sharks, and drums provided the greatest numbers of individual fauna recovered in the midden.

Seasonal indices of occupation provided by analyses of fish and shellfish indicate that coquina were collected in the summer, drum fish such as the croaker were collected in the fall, and menhaden in the winter (Russo 1992). Oysters and other shellfish and fish identified from the site were certainly available year-round, and permanent settlement for the site is a real possibility. Possibly the settlement consisted of a number of related families.

The evidence that we have recovered indicates that residents of the site were egalitarian and the site a simple habitation site. Artifacts recovered are strictly utilitarian, unelaborated, and few in number and kind. Comparing the site to criteria used to classify more recent shell rings as ceremonial or the result of socially complex cultures, Spencer's does not match up. The size of the shell arc is small, both diametrically (40 meters across) and vertically (little more than a meter), indicative of relatively few residents at a given time. And the interior is the former location of a spring or pond, not the meticulously swept floor of a ceremonial or ritual arena.

Oxeye

The shell ring that makes up the Oxeye site is large, larger in diameter than any shell ring outside of Florida. However, only a quarter of the ring is observable. The rest lies beneath 1 to 3 meters of marsh. By using a series of probes and soil cores, we were able to determine the depth and extent of the shell under marsh sediments and define the site as a shell ring (Figure 2). Radiocarbon dates place the construction of the ring between 4580 and 4370 years ago.

Because the site is located in marsh, excavation was impossible in all but a small section still above sea level. Even here, however, the lowest levels of our excavation units were daily flooded by tidal waters, making recovery and mapping difficult. Only one excavation unit was taken to sterile sand; this necessitated two gasoline powered pumps. Due to these logistical problems, Oxeye is the least understood of the three study sites. Nonetheless, it has turned out to be a dramatic and unexpected source of information providing perspective into the rise and evolution of shell rings.

At the time Oxeye was occupied, it lay adjacent to the salt marsh resting on sands of a well-drained, relict Pleistocene sand dune of the Pamlico Terrace formation (Scudder 1999). The deepest parts of the midden are a little over 2 meters. The top of the midden on the west stands only 2 meters above the risen sea level, whereas the top of the midden on the east lies, at points, nearly 2 meters below sea level. This indicates either that the sands supporting the midden have deflated along with the midden due to erosion from rising seas and daily tides, or that the ring was originally built on a severe slope (a 4 meter drop in elevation over 100 horizontal meters). Such slopes have not been recorded for shell rings on the Atlantic coast (e.g., Rollins base slopes only ½ a meter over a similar distance), although not many rings have had their basal slopes adequately mapped. However, the shell ring at Horr's Island (Russo 1996) was placed on a severely sloping dune (a 4 meter drop across a distance of 100 meters), resulting in an opposing ring-top differential of over 2 meters from one side to the other. The interior of the ring, however, appears relatively flat over this great distance, in part due to leveling brought about by infilling of low sloped areas with midden deposits.

The people who built the Oxeye ring were markedly different from those who constructed Spencer's Midden a thousand years earlier. Although the occupants at Oxeye had not yet invented pottery, that did use a fired clay cooking ball technology. Cooking balls represent the most common artifact type at the site. Generally absent were lithics, save a few flecks of debitage. Deer and other terrestrial animals were present, but in no great abundance. Freshwater and land turtles of a variety of species continued to be exploited, but the most commonly exploited vertebrates were small estuarine fishes similar to those exploited at Spencer's Midden. The most common were herrings and menhaden. Oyster shell, however, dominates the midden, providing over 99% of the faunal weight and volume in all excavation units.

In short, the fauna exploited at Oxeye was a far less diverse and equally distributed assemblage than that found at Spencer's. That is, oyster and small estuarine fishes were the prime resources targeted with terrestrial animals infrequently drawn on. What would cause such a narrowing of subsistence focus? The size of the site — over twelve times the volume of Spencer's for a similar length of occupation — gives part of the answer. It indicates a much larger population at Oxeye which required staples capable of daily replenishment.

However, we suspect the site served not as a permanent settlement for large numbers of people, but rather as a temporary settlement for large numbers of people who came together periodically for feasting and ritual. A recent survey (Russo 1992) has identified at least a dozen preceramic sites in the area, most buried below the marshes. The most economical way to feed such a population should they come together would be to collect the most numerous and widespread resources (oysters and nursery fish) in the marshes and bring them to the meeting place.

The size and shape of the ring indicates that the organizers of the feast knew how many people would attend. The site is not a hodgepodge of randomly placed encampments. It is not a series of concentric rings ever expanding and shrinking as populations grew or shrunk or attendees agreed or declined invitations. Rather, the site began as a 100 meter shell ring and ended as a 100 meter shell ring. We suspect that as more or fewer participants showed up due to vagaries of inter-societal conflicts, dissolution of marriage arrangements, or disease, feasting sites were moved. So far, Oxeye is the earliest and only known preceramic Archaic ring. More ring sites may be buried beneath the marsh.

Rollins

Like Oxeye and Spencer's, Rollins shell ring on Fort George Island was a rather short-lived phenomenon. Radiocarbon dates indicate about a 200 year span of occupancy at the most, between 3,600 and 3,800 years ago. Dates from initial shell deposits on the east and west sides of the trench indicate construction started around the same time in both areas. This demonstrates that the size of the ring was planned from the beginning.

Some 3700 years ago, Rollins was surrounded by scores of both small and large Orange period communities (Russo 1992). Populations had increased dramatically in the 700 years since Oxeye had been abandoned; hundreds of sites contemporaneous with Rollins stretched along the coast from South Carolina to Cape Canaveral and up the St. Johns River into central Florida. The extent to which these communities interacted at Rollins is unknown, but the people who managed the rings and events held there had a potential participant audience theretofore unknown in the Southeast.

The ring itself is larger than any other on the Atlantic coast at over 250 meters between outside edges and 150 meters across the interior. Unlike other rings of the period in Georgia and South Carolina, however, the ring is not nearly a symmetrical circle. On the west side of the ring, the shell thickness from the interior of the circle to the outside was up to 75 meters while on the east side it was as little as 5 meters. Portions of the western side of the ring were four meters tall, while the eastern side has sections as little as a meter in height. But most perplexing were the smaller "rings" attached to the large ring (Figure 3). On the west, 5 rings (A-D, F) varying in size from 25 to 40 meters in diameter were attached to the outer wall of the main ring. One small "ring" (E) seemed to actually be carved out of the main ring; while at least one, and possibly four similar rings were attached to the north arm of the main ring.

Because there are records of historic quarrying of shell middens on the island, one of the main goals of our work at Rollins was to ascertain whether some of the aforementioned small-ring features were the result of modern mining. Contour mapping combined with extensive soils analyses (Scudder 1999) indicate that none of the smaller rings had been mined for shell. The level of pH, calcium, and total phosphorus, as well as complete soil horizonation, indicated that the interiors of all tested rings were undisturbed. This indicates that they were features purposefully constructed as part of the main ring architecture. Similar findings occurred in tests taken from the interior of the main ring, i.e., the central "plaza," as well as in the open area on the south side of the ring.

What was the purpose and function of the ring(s) at Rollins? As at Oxeye, we believe the site served as the location for public ceremony or ritual and feasting. The result of the feasting is the ring itself, while the ceremonies occurred in the main central area kept clean of refuse. As at Oxeye, artifacts are strictly utilitarian, but are far more numerous, due largely to the invention of pottery by this time. Thick fiber-tempered pottery is found throughout the ring in great numbers (2,352 sherds larger than 3 cm were recovered), either plain or with simple incised designs (n=744). Other artifacts include a number of incised bone pin fragments. As at Oxeye, lithics are generally absent.

Faunal constituents in the midden were also similar to those at Oxeye, although the species of small fish were more diverse. Oyster constituted the primary refuse throughout the ring with occasional deposits of coquina and numerous

features containing the remains of small schooling fishes such as herrings, shads, croakers, menhaden, pinfish, and drums. Terrestrial mammal and reptiles were rare. As it Oxeye, this suggests that great masses of people were fed in equal kind with basic staples, with no one group favored over another. Seasonal measures of the fauna indicate that coquina, croaker and pinfish were collected in the summer and menhaden in the winter (Russo 1992). This suggests that the ring was used for ceremony and feasting a number of times throughout the year.

Do the similarities between Oxeye and Rollins suggest that little had changed in terms of social organization in 700 years which separate the two cultures? We do not think so. In the same time span, feasting remains deposited at Rollins surpassed those at Oxeye nearly one hundredfold. Obviously, more people attended the feasts at Rollins, perhaps with greater frequency, and these larger numbers resulted in more social conflicts which required social resolutions. Ring asymmetry may reflect this greater social complexity. Obviously more time, labor, and attention were paid to building the larger west side of the ring. The reasons for this may be related to competitive feasting, e.g., clan vs. clan, the winners being the depositors of greater amounts of refuse. What they may have gained by these accomplishments is not apparent in the archeological record, but the record of small accretional shell deposits punctuated with massive, perhaps competitive, deposits of oyster shell is readily visible in the features and zones of shell (Figure 4).

Conclusions

Our studies have shown that shell ring phenomena, well known in Georgia and South Carolina after 4000 B.P., made its first appearance in northern Florida at Oxeye 4,500 years ago, and reached its most elaborate expression at Rollins some 700 years later. The limited and locally-oriented artifact assemblages from these sites suggest the phenomena were also local in character. Shell rings were constructed to accommodate increases in social complexity brought about by increases in populations which were effected when resident hunter/gatherers switched focus from terrestrial and freshwater resources to exploiting the rich estuarine resources along the coastal. Use of these rings rose and fell with historically-particular circumstances that remain unknown. That is our future challenge. The "America's First Coast" study supported by the National Geographic Society has brought us a step closer to this goal.

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Figure 1. Spencer's Midden 8Du5626

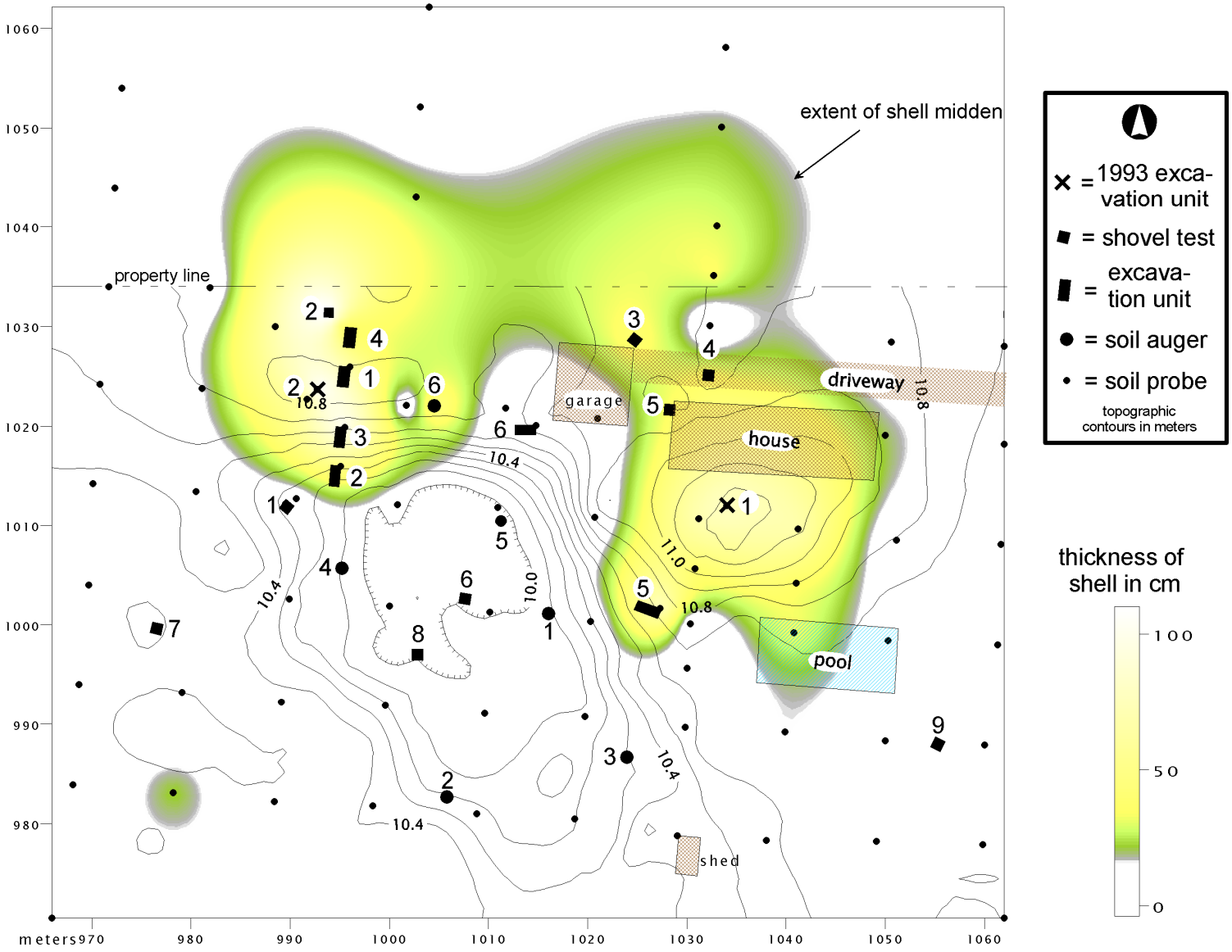


Figure 2. Oxeye 8Du7478

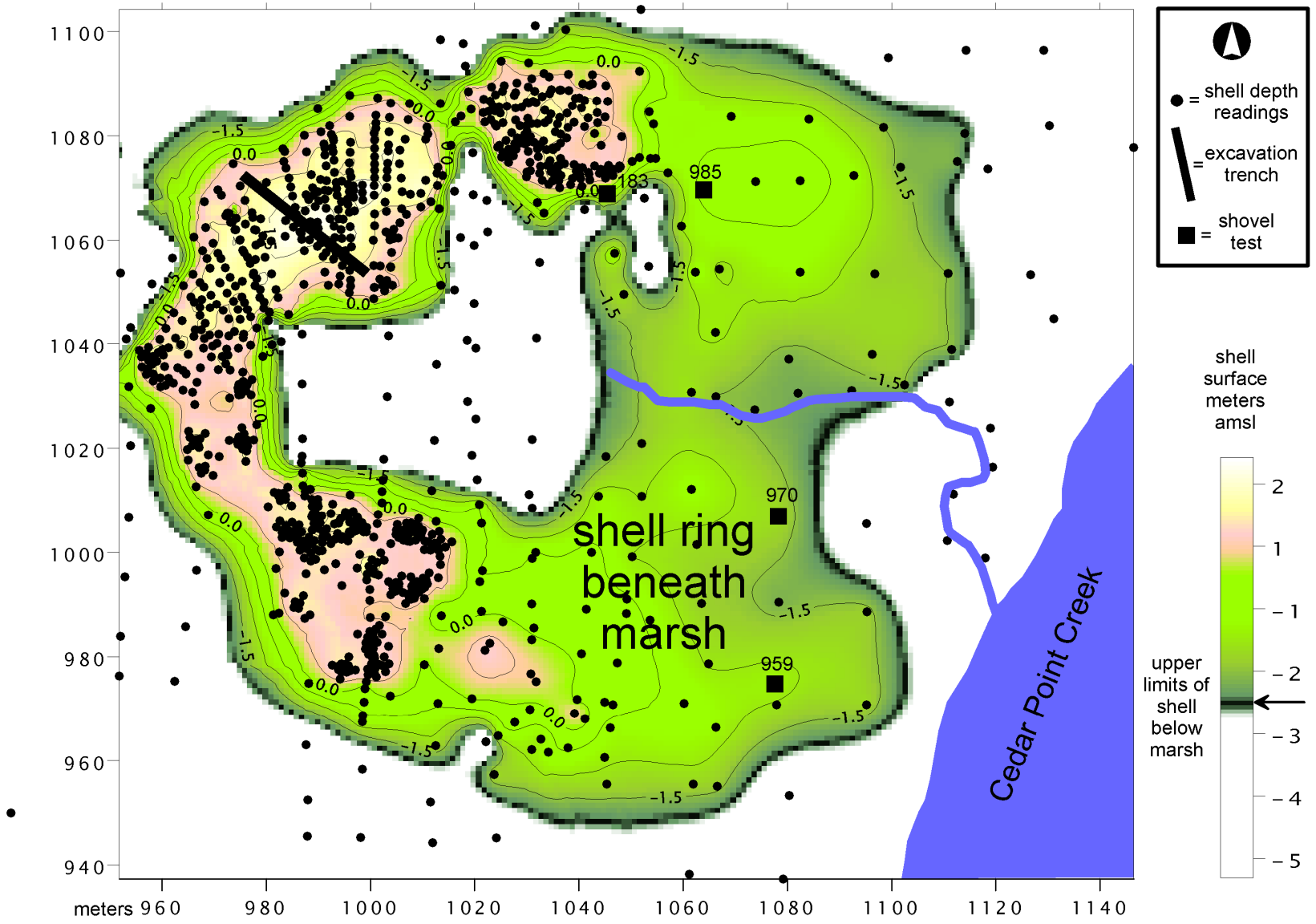


Figure 3. Rollins 8Du7510

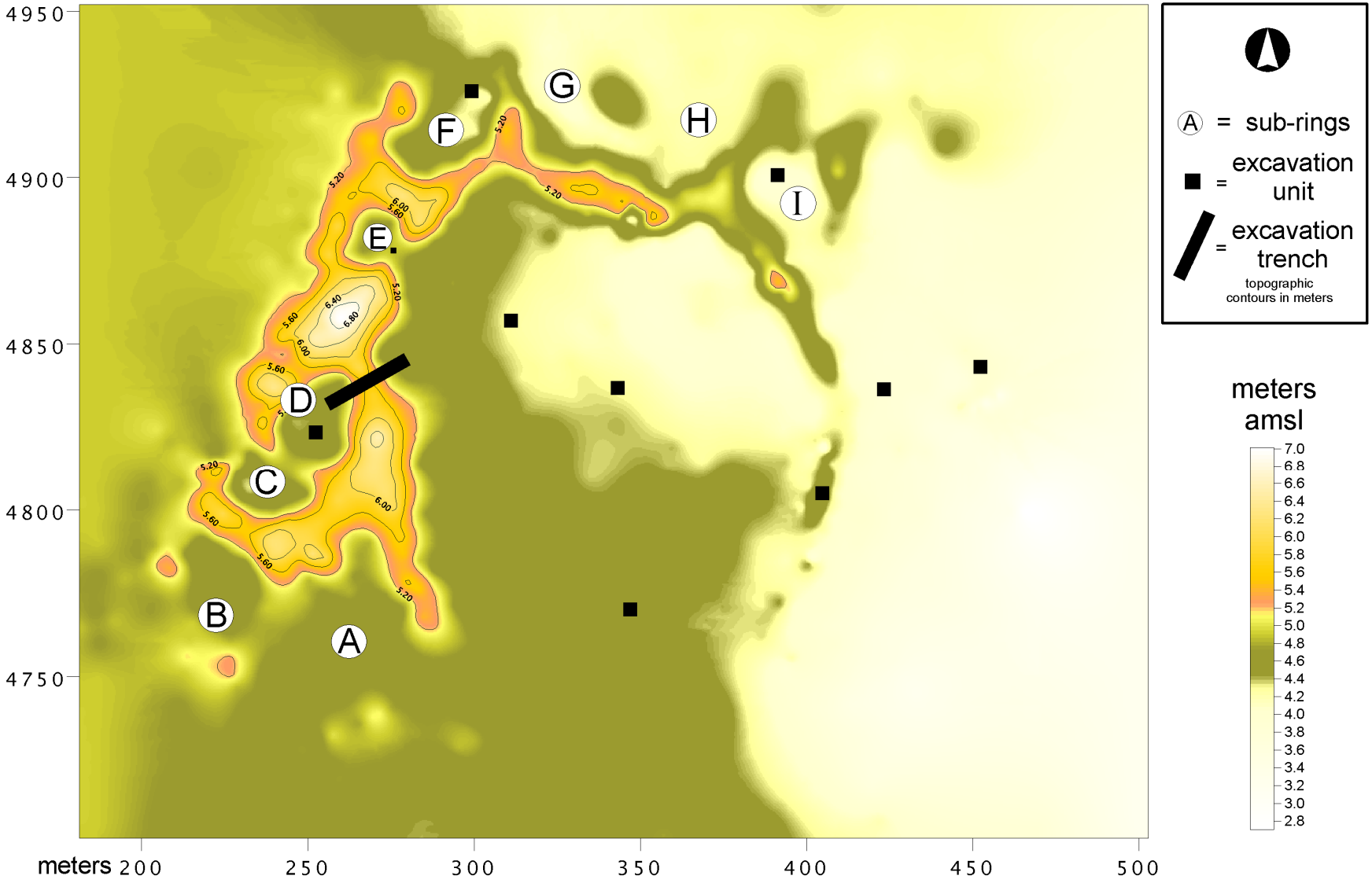
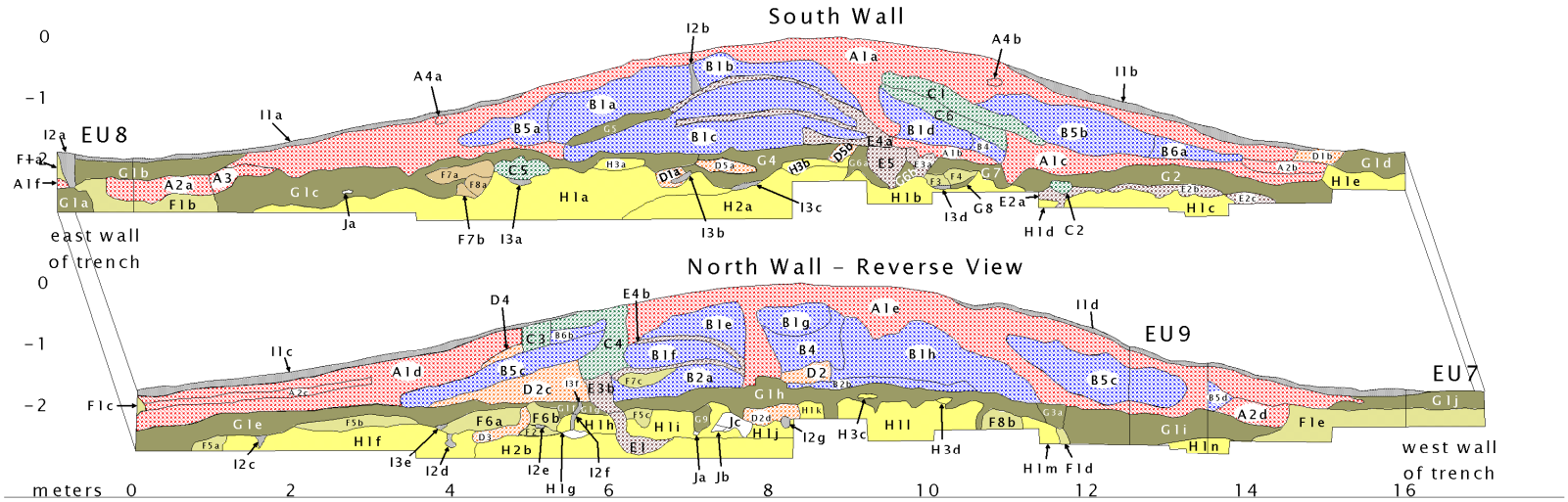


Figure 4. Rollins Shell Ring, Trench 1 Profile



A. dense oyster with 10yr 2/2 to 4/2

1. (Zone 1) dense oyster in 10yr 3/1 to 4/1 loamy sand
2. (Zone 1 strong brown) dense oyster in 10yr 2/2
3. (Zone 1*) dense oyster in 10yr 2/2 to 4/2 with more soil matrix than A1.
4. (#23) dense coquina shell

B. dense oyster with little to no soil

1. (Feature 1) dense oyster with dense amounts of small fish bones & shell hash, little to no soil matrix
2. (Feature 1 base) dense oyster with small amount of 10yr 4/2 sand
3. (Feature 1a) 10yr 3/1 sand with moderate amounts of oyster and shell hash
4. (Feature 1*) dense oyster with moderate amounts of 10yr 4/2 sand
5. (Feature 3) dense oyster with shell hash – little to no soil matrix
6. (Feature 3 with more matrix – no matrix colors given)

C. moderate to light oyster in 10yr 2/1 to 2/2 sands

1. (Area 4) 10yr 2/1 loamy sand with moderate amounts of whole oyster
2. (Feature 4) 10yr 2/1 loamy sand with crushed and whole oyster
3. (#6) 10yr 2/1 loamy sand with moderate amounts of crushed shell
4. (#7) 10yr 2/1 loamy sand with moderate amounts of whole oyster and shell hash
5. (#13) 10yr 2/2 loamy sand with moderate amounts of whole oyster and crushed shell
6. (#17) 10yr 2/1 with moderate amounts of oyster, dense amounts of small fish bones & shell hash

D. moderate oyster in sands 10yr 3/1 to 6/4

1. (Zone 1/2) moderate to light amounts of oyster in 10yr 6/3 mottled with 4/1 sand
2. (Feature 1a) 10yr 3/1 sand with moderate amounts of oyster and shell hash
3. (Feature 6a) 10yr 4/1 and 6/4 sand with particulate charcoal and moderately dense oyster
4. (#5) 10yr 3/1 to 4/1 loamy sand with abundant to moderate amounts of shell hash (some burnt)
5. (#8) 10yr 4/2 sand with moderate amounts of oyster

E. little to no oyster in sands 10yr 3/2 to 4/2

1. (Feature 9) 10yr 3/3 humic sand, light amounts of oyster & particulate charcoal & dense small fish bones
2. (Feature 13) 10yr 3/2 loamy sand with occasional shell
3. (#9) 10yr/ 4/2 sand with small amounts of crushed oyster and shell hash
4. (#16) 10yr 4/1 sand with small amounts of whole oyster and shell hash
5. (#19) 10yr 3/2 sand with small amounts of oyster

F. mottled or mixed sands 10yr 4/1 to 7/4, little to no shell

1. (Zone 2/3) mottled 10yr 5/1 to 5/4 sand with occasional oyster
2. (Feature 7) 10yr 5/3 and 7/4 mixed sands with particulate charcoal on bottom
3. (Feature 8a) 10yr 5/1 & 6/4 sand
4. (Feature 8b) 10yr 6/4 & 7/1 mixed sands with little shell
5. (#2) 10yr 4/1, 4/2, and 6/4 mottled sands
6. (#4) 10yr 4/1 – 4/3 and 5/1 – 5/3 mottled and mixed sands with charcoal pieces and flecking
7. (#11) 10yr 4/3 and 10yr 6/3 mottled sands
8. (#12) 10yr 6/3 and 4/3 mixed sands

G. 10yr 2/1 to 5/5 sands with little to no shell

1. (Zone 1 n.s.) 10yr 3/1 to 4/1 loamy sand
2. (Zone 1 l.s.) 10yr 3/1 to 4/1 loamy sand with occasional shell
3. (Zone 1 n.s. darker) 10yr 2/1 loamy sand
4. (Feature 10) 10yr 4/2 sand with charcoal flecking
5. (#15) 10yr 4/2 clayey sand
6. (#18) 10yr 3/2 sand
7. (#20) 10yr 4/2 sand
8. (#22) 10yr 4/3 sand
9. (#26) 10yr 5/4.5 sand

H. sterile sands 10yr 6/4 to 8/1 with no shell

1. (Zone 3) 10yr 6/4 to 7/1 sand
2. (Zone 4) 10yr 7/1 sand
3. (#14) 10yr 8/1 sand

I. Roots and charcoal

1. (#24) Root mat and humus
2. (#25) Root mold and/or disturbance
3. (#3) Dense particulate charcoal

J. Calcite and calcitic sands

1. (#10) Calcite and/or 10yr 4/3 sand with calcitic concretions