

CHAPTER EIGHT

ARCHAEOLOGICAL TECHNOLOGY

STUDENTS LEARN HOW MODERN ARCHAEOLOGISTS UTILIZE EXCAVATION, CARBON-DATING, CURATION, AND PUBLICATION TO DEVELOP OUR UNDERSTANDING OF FLORIDA'S EARLY PEOPLE.



WHAT IS ARCHAEOLOGY?



Archaeology and history both study man's past, but they do it in very different ways. Archaeology studies early cultures by finding and interpreting MATERIALS they left behind, like pottery, burned seeds, shell middens, or wooden sculptures. These artifacts show what people were DOING (making pots, cooking, eating shellfish, and carving).

History studies early cultures by reviewing WRITINGS made by members of that culture, or by visitors to that culture. These writings might include descriptions of travels, letters home, lists of the people living in a town, or an obituary describing a death. These written documents show what people were THINKING (i.e. about exploration, family, population growth, or grief and religion).



Excavations in Florida shell middens. Photos courtesy of the Florida Public Archaeology Network, NE Region.

A natural divide between archaeology and history occurs when a culture begins to read and write. Literacy (the ability to read and write) allowed people to record their histories. Before cultures became literate, they could not record their "stories." As a result, modern historians cannot directly study these pre-literate societies. Archaeologists can study them directly because they rely on artifacts (not words) for clues to early lifestyles and technologies.

Archaeology Note: Many archaeologists also study literate cultures. NASA's archaeologists study sites important to the history of aviation and space flight (like crash sites). Garbologists are archaeologists who study modern landfills to learn about eating patterns and recycling behaviors of modern people.

Back to Literacy: Different cultures learned to read and write at different times. For example, the Egyptians began writing around 3300 BCE, the Chinese around 1200 BCE, and the Mesoamericans in 600 BCE. For each of these cultures, recorded history began at these dates. The Timucua were not a

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literate culture when the Europeans arrived. However, according to the Spanish priests, they learned to read and write very quickly. One or two letters written by Timucua chiefs are still in existence today. These letters fall under the study of history – as do the written records of Spanish, French, and English explorers who visited the Timucua.

Except for these documents, everything we know about Florida's early people comes from archaeologists, through the study of things, not written words. The presence of burned corn cobs tells us that a group cultivated corn. Bundle burials suggest that the deceased were processed in a charnel house (see the unit on Building Technologies). Wooden carvings (via analysis of the carved parts) demonstrate the different kinds of woodworking tools that a culture used. The presence of glass beads indicates interaction with European explorers.

So, where do archaeology and history meet? In Florida, they bump into each other around 1513, when Ponce de Leon first lands near Cape Canaveral. When he sails around to the west side of Florida, he clashes with the Calusa Indians. Amazingly, one speaks a little Spanish. Had this Calusa person visited the Spanish on the island of Cuba to the south? Had he learned the language from Spaniards whose ships had wrecked in southwest Florida? Or had the Spanish been making unofficial trips to Florida before Ponce de Leon's famous journey? Historians are still searching for an answer. However, it's only after Ponce de Leon records his unpleasant encounter with the Calusa that historians finally have written documents to work with.

European documentation about Florida's Indians began in 1513. The last Timucua evacuated to Cuba with the Spanish in 1763. During this time (1513-1763) both archaeologists and historians have plenty of material to study. Archaeologists focus on what they can prove through artifacts. When talking about the people living in northeast Florida during the Spanish mission period, they call them "San Pedro" and "San Marcos" cultures. Historians focus on the records of Spanish priests and administrators. They call the native people who lived at Spanish missions "Timucua." San Pedro and San Marcos cultures ARE the Timucua. They are Timucua speakers living in a particular place and producing a particular kind of pottery. So, the archaeological terminology provides more detailed knowledge about technology and way of life, while the historical terminology (i.e. Timucua) gives a rough location and the language spoken.

Do archaeologists and historians ever work together? This kind of collaboration is happening more and more every day. By working together, archaeologists and historians have identified the Mount Royal archaeological site (near the base of the St. Johns River) as the Timucua village Enescape. They believe a Spanish mission called San Antonio de Enescape existed there as well.

Archaeologists have also located Spanish artifacts at several native villages along the southwest coast, interior, and northwest of Florida. These include bells, mirrors, beads, and scissors. They date to around 1539, when Hernando De Soto was marching through Florida.

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By working with historians, archaeologists have matched these excavated sites with the Timucua villages mentioned in records of Hernando de Soto's travels. Some of these sites are close to modern Florida towns. *Utinamochara* was just west of Gainesville. *Potano* was located at the town of Evinston. And *Itaraholata* was located southwest of Ocala. As archaeologists collect more data and historians locate new documents, they'll both continue to work towards creating a more complete understanding of Florida's early people.

A word about CONTEXT: What is context? Context is probably the most important concept in archaeology.

It describes everything about where an artifact was found. For example, a whelk shell bowl was discovered at Dent Mound, site 8DU68 on Pelotes Island in Duval County, Florida. But that's just the beginning. It also describes the site where this artifact was found (the whelk bowl was discovered in an oyster shell midden that was eroding into Clapboard Creek). Context also describes the other artifacts found near the whelk bowl. A large number of Orange Period fiber-tempered pottery sherds were also eroding out of the midden, along with a few Archaic period chert projectile points. Some pottery sherds from later periods include St. Johns chalky and sand-tempered.

The context for this piece tells us a lot. The bowl was found with Archaic period pottery and projectile points, so it was probably made by Archaic peoples in Florida. The few later artifacts suggest that later cultures visited the site. Because the shell midden is washing away into the creek, many later artifacts may have already been washed away, collected by treasure hunters, or relocated when the area was mined to create materials for road fill.

Knowing that it came from an eroding site is important. You don't have nearly as much context information at this kind of disturbed site as you would have at an excavation. When strata are carefully removed, you know exactly which artifacts came from above the shell bowl (younger artifacts) and which artifacts came from below the shell bowl (older artifacts). Archaeologists preserve context information by scraping away the dirt in careful 10 cm levels, so they can retrieve as much data as possible.



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LAB – CREATING A MODEL MIDDEN:

BACKGROUND: Archaeologists often rely on the excavation of middens (trash piles) to provide the information needed to learn about ancient cultures. Many Timucua middens are composed mostly of shell with a little dirt and a few artifacts and biofacts mixed in. A biofact is a shell, seed, or bone which has not been modified by man, but does give us clues about the past.

The materials found in most middens were not laid out with any foresight or planning. Native peoples just dumped their trash. While some archaeologists study midden “deposition” (how the trash was dumped), most archaeologists focus specifically on the artifacts they find. In this activity, you will be constructing a midden for classmates to excavate. While building it, think about how trash is actually dumped. If you had just shucked a bunch of oysters, you’d probably dump the basketful of leftover shells in a pile. If you had just finished knapping some stone points, you might shake out the deer hide you work over, scattering the debitage over a small area. If a pot broke, the pieces would probably be dumped together. Also, remember that middens weren’t used for only one day. If shellfish were shucked five times in a week, there might be five different piles of shell trash (for each family in the village). Would the piles be right on top of each other? Or would they be spread thinly across the area in the form of a sheet midden? You’ll need to decide these things before you start constructing your midden. **Remember:** The Timucua did NOT “construct” middens. They simply threw away trash. Your purpose in constructing this midden is to create a realistic midden model for classmates to excavate.

You’ll be creating strata (layers) in your midden. Stratigraphy (*stra-ti-gra-fee*) is the study of strata, the layers of cultural materials discovered during excavation. This science is based on the fact that long ago, the surface of the ground was lower than it is today. As leaves fell onto this ground and dust blew in, more soil was created above that ancient surface. Prehistoric peoples moved to the site and dug holes into the soil to set posts for their homes. They also deposited leftover shells, broken stone points, and chipped pottery across the top of the soil. This debris raised the level of the ground a bit more. When later historic peoples lived on the same site, they also dug postholes for their huts and dumped shell trash, broken iron tools, and charred seeds. This raised the level of the ground even further. Much later, when a family of modern Floridians moves to the same site, they might accidentally drop trash like coke cans and plastic grocery bags.



Look again at this excavation. The left side shows a feature. This is believed to be part of the first fort at St. Augustine. Did you know there were nine forts, including the one built from coquina that still stands today?

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The foundation of their house may be dug down through the older strata below. Stratigraphy tells us that younger materials will usually be found at higher levels of an excavation, while older materials will be found at the lower levels. If a site has been disturbed by digging animals, an uprooted tree, or human treasure-hunting, the strata can be mixed, producing confusing data.

Archaeology Note 1: Objects made by man are classified as “artifacts.” Postholes, building foundations, and ditches are classified separately as “features.” Features are parts of structures or buildings made by man.

Archaeology Note 2: The stratigraphy principal that states that older artifacts will be deeper is called “superposition.”

INSTRUCTIONS:

1) **Design a midden plan that will answer the following questions.** You will be required to describe your plan, the locations of artifacts, and the methods used to deposit them, so consider carefully and take good notes. You will be designing two midden strata, one BEFORE contact with Europeans (the lower one) and one AFTER first contact with Europeans. Remember, you do not need to include every single artifact and biofact available to you. Be selective. For the Contact Period midden, do not add many European artifacts (perhaps only one). These are rare finds. If agriculture was not important at this village site, add only a few seeds or none at all (usually, only charred seeds survive in the archaeological record). If agriculture was important at this site, add more. If more than one seed type is available to you, did your group cultivate both? What about the collection of wild seeds like acorns?

Questions to consider:

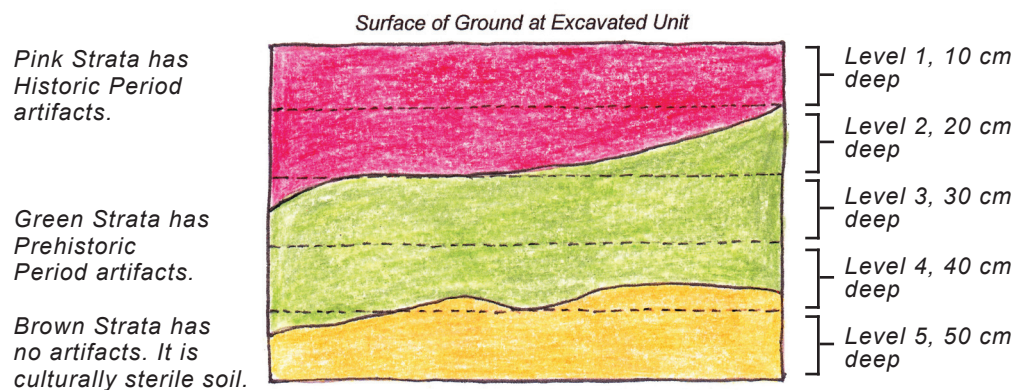
- a. Will this midden be mostly prehistoric, mostly historic (Contact Period) or an even split between the two?
- b. What artifacts and biofacts will be present in both levels?
- c. Which materials are only in one level and why?
- d. What amounts of each artifact will you deposit, and what does that indicate? For example, lots of shell means lots of shellfish eaten. A large number of iron artifacts probably indicates a mission village, since there was regular, long-term contact at these sites.
- e. What seeds were used in each period? Contact Period only: corn, bean, and pumpkin. Cultivated by both Prehistoric and Contact Period cultures: sunflower, squash, quinoa, and gourd. If your midden includes lots of charred corn, quinoa, or sunflower seeds, that suggests intensive cultivation.

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- f. Will materials be deposited in piles or as a sheet midden? Will this vary according to the type of material being deposited?
- g. Will the division between strata be flat? On an incline? Hill-shaped?



The materials you have for midden construction will vary. Some examples include: pieces of shell or bone (you can modify some of these into tools by sharpening them on concrete), broken pottery, stone debitage, seeds, glass beads (Spanish), and copper (prehistoric, but usually found in burial mounds, not middens), nails (Spanish nails were iron, not steel, and they were square), moist yellow sand, moist gray soil, and moist brown soil.

- 2) **Starting Construction:** Sprinkle a thin, but solid strata (<math><1/2\text{ cm}</math>) of plain sand across the base of your container. This represents the culturally sterile sand deposited at a time before the site was occupied by humans (“culturally sterile” means no sign of humans). When culturally sterile sand is reached, excavation normally goes no deeper. Remember, many Timucua middens are 99% shell, with little sand.
- 3) For the next 2-4 cm, you will be adding a strata of midden with damp gray soil. Different colored soils are used to indicate a different time period during which the midden was created. They would normally be slight variations on the area’s natural soil color. Sprinkle in some soil, then begin depositing your artifacts and biofacts (including plenty of shell), adding more soil along the way. Make a list of the materials you add, plus a clear sketch of the locations of these materials. If you deposit all of the artifacts and biofacts in a single layer (filling the rest of the 2-4 cm strata with plain dirt) this indicates that the area was occupied for a while, then unoccupied. If you deposit a few artifacts, then dirt and shell, then more artifacts and more dirt and shell (so the artifacts are dispersed vertically through the strata) this indicates that the

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LAB – CREATING A MODEL MIDDEN *continued*:

site was continuously occupied for a long period of time. If you are dividing your time periods evenly, this layer should be 2.5 cm (or 1") thick. When you have completed the layer, use your fingers to press down on the surface. This will compress the soil, making it easier to excavate later (lower layers at actual sites have been compressed by the weight of shell and soil above them). Start sprinkling brown soil and shell atop the previous strata. Make it just thick enough so that you can't see the lower strata through it. Deposit the artifacts and biofacts appropriate for this time period, adding soil along the way. Record your list of midden materials, and sketch their locations. Leave at least two centimeters of space at the top of your midden to prevent overflow. Use your fingers to press down on the entire surface of the midden to compress the soils. On the outside of your container, name your midden using the team members' last names. For example: Jones-Davidson Site.

- 4) **Recording your Method:** On a separate piece of paper, put your notes into the following format.

Prehistoric Midden Record:

- List the materials you will include and the amounts (i.e. 2 shell tools, 1 copper breastplate, about 20 chenopodium seeds, handfuls of coquina shell).
- Explain the reasons you made these choices and what it should tell archaeologists about this culture.
- Describe the method of deposition: trash piles or sheet midden, and why.
- If you included any artifacts like pottery or shell or bone tools, describe and include their locations.
- How many centimeters thick is this strata? Was this site used longer by prehistoric or historic peoples?
- Sketch the locations of different materials. If shell is located throughout, note this in the description. If different shell species are used, record this information as well.

European Contact Period Midden Record:

- List the materials you will include and the amounts (i.e. 2 nails, 4 stone debitage chips, 3 corn kernels, handfuls of crushed oyster shell).
- Explain the reasons you made these choices and what it should tell archaeologists about this culture.
- Describe the method of deposition: trash piles or sheet midden, and why.



Spanish glass beads, courtesy Mission San Luis

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- d. If you included any artifacts like pottery, nails, glass beads, or bone tools, describe and include their locations.
- e. How many centimeters thick is this strata? Was this site used longer by prehistoric or historic peoples?
- f. Sketch the locations of different materials. If shell is located throughout, note this in the description. If different shell species are used, record this information as well.

BACKGROUND: Excavation is not about moving dirt as quickly as possible. It's about noticing details. What color is the soil? Does the soil color change? Is it an abrupt change, or does it occur gradually? Is the soil sandy or slick and clay-like? Is it mostly shell with a little dirt OR mostly dirt with very few shells? Each of these details is important to interpreting the past. Archaeologists record all of these details. They excavate carefully, removing soil and artifacts, in an organized fashion using scientific tools and methods. Excavation is a systematic process that involves “scraping away” the dirt to uncover the past. In this activity, you will be excavating a midden created by your classmates. Because you will be using the materials you excavate for the Screening and Flotation labs, you will bag the contents of each 2 cm level in labeled containers (in an actual excavation, the levels are 10 cm deep, and the material is screened immediately. Only the artifacts are bagged). You will not be excavating the entire site. Archaeologists are ethically bound to leave a portion of each site undisturbed for future archaeologists to study (one exception is when a site is going to be bulldozed for construction). In addition, archaeologists never have the funding or manpower to excavate an entire site. They must carefully plan where they will excavate, to make the most of their time and money.

Archaeology Note: When planning an excavation, the following costs must be considered when seeking funding.

- **The archaeologists' salary while in the field.**
- **Equipment cost or rental** for screens, shovels, trowels, backhoes, trucks, cameras, safety equipment, walkie talkies, batteries, pumps and hoses (for wet-sites), artifact storage bags, flotation equipment, and more.
- **The archaeologist's salary for time spent analyzing the artifacts and for researching and writing reports.**
- **Proper storage (curation) of the artifacts.**
- **Additional considerations:**
Sometimes this funding also pays for the creation of educational displays in museums and parks, as well as archaeologists' salaries for delivering lectures about the excavation.

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LAB – EXCAVATING A MODEL MIDDEN *continued*:

INSTRUCTIONS:

- 1) **Focus your research.** What information do you want to learn about this midden – or about the people who created this midden? *Remember, when we say “people,” we’re referring to native cultures – as though this were a real midden – not your classmates who actually constructed the model.* The research question you ask should be specific and unique to your interests. It should also be a question that can be answered in this model excavation. For example, “Did pottery styles change from prehistoric to Contact Period times at this site?” would not be useful if your class only used one type of pottery during midden construction. Likewise, you may be interested to know whether many of the Timucua suffered from malnutrition, but that cannot be answered from a midden excavation, only from a burial study. Research questions must be carefully tailored to the site in question.

Use your experiences in midden construction to help you design your question. Then rephrase it as a hypothesis. **For example:** The question, “Did pottery styles change from prehistoric to Contact Period times at this site?” becomes “The artifacts discovered at this midden site will reflect the use of different pottery styles by prehistoric and historic native peoples.”

When doing your analysis, you will report whether your findings “support” or “fail to support” your hypothesis. For example, “Yes, the findings support a change in pottery type between time periods,” or “No, the findings fail to support a change in pottery styles.”

- 2) **Plan your excavation.** The surface area of your midden site is probably about 200 cm². Your funding will allow you to excavate 2 units down to culturally sterile soil. Each unit will be 7 cm x 7 cm and cover a surface area of 49 cm². Together, the two units will cover just over a third of the site. Where will you place these units? Touching each other or far apart? Along the edges or in the middle? Will they be oriented with the edges of the midden or will they be diagonal? Be sure to note why you are making these choices. Make a sketch of your excavation plan.
- 3) **Have your storage system ready.** As you excavate, you will remove 2 cm of material for each level. The material excavated from each level needs its own labeled bag, for example: Unit 1, Level 1, X cm. “X cm” is the depth at which the top of the level begins. Measure this depth from the top of the container. How? Tape a piece of string from one corner to another. Measure straight down from the string to the surface. The point you measure from is called a “datum.” Mark the location of your datum on the string. You will measure the starting depth of each successive layer from this point. Each time you start excavating a new level, start a new bag.

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LAB – EXCAVATING A MODEL MIDDEN *continued*:

- 4) **Set up your units.** Use toothpicks to mark the corners of your 7x7 cm² unit. A toothpick is about 6.5 cm long, so you should be able to push it all the way to the bottom of the midden container. If shell blocks the path of the toothpick, insert it as far as possible, and be careful not to dislodge it during excavation. Some archaeologists leave a small triangle of soil unexcavated in each corner to ensure that they don't dislodge the corner markers.

- 5) **Begin excavation.** Your excavation tool will be a putty knife. At an actual dig, tools would include flat-blade shovels and flat trowels. You're working in miniature here. Making the sides and bottom of your unit straight and smooth is a difficult skill to master. It takes patience. You're working in a shell-filled substrate, so shells will certainly block your line of excavation and stick halfway into the unit. Excavate patiently. Try not to make the unit any bigger than the square. If you need a guide, tape a string across the top of the container in line with the edge of the unit you're excavating. Use that string as a guide to cut a line in the soil with your putty knife. Repeat as you excavate deeper. It is important for the walls to be smooth so archaeologists can see the stratigraphy - the levels that indicate transitions from a younger culture to an older one. Smooth sides also make the excavation scientifically accurate.

- 6) **Excavate in levels.** Remember, **YOU ARE NOT DIGGING WILDLY.** Use your tools to scrape down to the appropriate depth. Keep your ruler handy, and measure your depth frequently. **DO NOT GET IN A RUSH** and excavate deeper than one level at a time. There's no way to go back and undo a mistake. Bag and label the materials excavated for Unit 1, Level 1.

If you notice a change in soil color in the middle of a level, **STOP** excavating. When you begin again, you will carefully remove the upper soil color all the way across the unit. Do not dig into the new color until the upper layer has been completely excavated. The material from one soil color goes in one bag. When you proceed to excavate the rest of the level, put the materials from this new strata in a new bag.

You have reached an earlier time period, and these materials will need to be stored separately for analysis. Label the new bag, "Unit 1, Level 1, X cm," so you will know how deep you were when the new strata started. "X" tells us the depth of the top of the new soil color. Take this measurement from the top of the container. This is your datum point. If the color change is on a slant, be sure to sketch the angle, including measurements of a high point and low point. This stratigraphy should show up clearly in the side of your unit after you are through excavating. If possible, take a digital photo of the strata visible after excavation. Be sure to

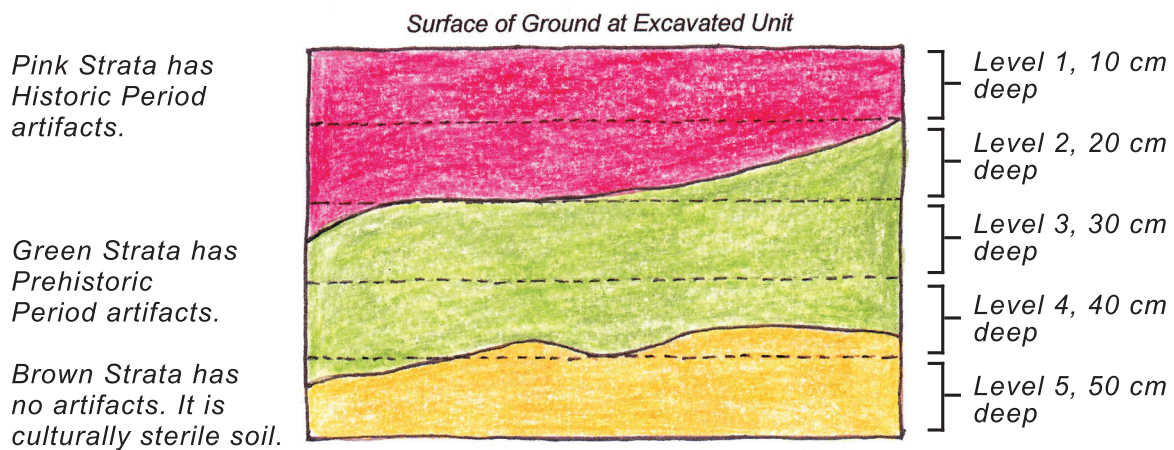
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record detailed observations as you go. Anything could be important during later analysis.

Remember, LEVEL depths are constant – and predetermined by your research goals. STRATA are layers of cultural materials that were laid down in the natural course of living. Levels and strata rarely match up. In the sketch below, the soil colors are bold and different. In a real excavation, soil colors are usually varieties of brown and gray, much more difficult to pinpoint.



This sketch shows the stratigraphy of an excavation that includes historic and prehistoric artifacts. Level 1 is entirely Historic (one bag for artifacts). Level 2 includes two cultural strata, so two bags are needed to separate artifacts. Level 3 includes two cultural strata, so two bags are needed. Level 4 includes the prehistoric strata and culturally sterile sand (one bag needed). Level 5 includes a tiny bit of prehistoric material. One bag needed.

Because each model midden is about 5.5 cm deep, you should be able to excavate 3 levels, with the bottom level being shallower because you will reach culturally sterile sand and stop excavating.

Repeat this process for Unit 2. What happens if an artifact is half in and half out of the side of the unit? Work around the artifact without removing it from the wall. When your excavation is complete, you may carefully remove the artifact from the wall of the unit. Record the exact depth where it occurred, and be sure it is included in the appropriate bag. If possible, take a digital photo of the artifact in situ (in place) before you remove it from the wall of the unit.

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LAB – EXCAVATING A MODEL MIDDEN *continued*:

- 7) **Stratigraphy.** As noted earlier, after you complete each unit, you should take a look at the strata visible in the side (profile) of the excavated unit. Measure the depth of each stratum. If the line between strata is on a curve (instead of being precisely horizontal), measure it at several points so that you can plot the points and draw a clear sketch of the strata. Repeat for Unit 2. If you have access to a digital camera, photograph the strata for inclusion in your final report.
- 8) **Record your observations.** This will be included in your final report. On a separate piece of paper, note any differences observed between the units (i.e. amount of shell, thickness of strata, artifacts observed). What parts of the excavation were challenging? Include depths of cultural strata and sketches of strata as well as a sketch of the locations of your units in relation to the entire midden.
- 9) You will be analyzing the artifacts and doing flotation studies on the soil (matrix) in a later activity.



Note the strata of shell midden and soil in the stratigraphy of this excavation. St. Johns County, FL, courtesy of the NE Region Florida Public Archaeology Network

DIFFERENT KINDS OF ARCHAEOLOGY

The first thing an archaeologist needs is a Research Question. There's no sense wasting time, money, and sweat digging up the ground unless they have a purpose in mind. For example, archaeologists studying the change from prehistoric Alachua cultures into historic Potano Indians might ask the following question: "How do the artifacts found at pre-mission Alachua sites compare with artifacts found at mission-period Potano villages?" This question has 1) a specific goal – changes in Alachua tool use as influenced by Spanish missions, and 2) a specific location – in this case, the Richardson Site. This study required excavation of native sites. (*Archaeologist: Jerald T. Milanich*)

Archaeologists searching for sources of spiculate clay used in making St. Johns pottery would ask entirely different questions: "Where in northeast Florida did St. Johns potters find clays with naturally high levels of sponge spicules?" This question has 1) a very specific goal – to discover a specific natural clay source and 2) a specific location (northeast Florida). This study did not require the excavation of native sites. (*Archaeologists: Vicki Rolland and Paulette Bond*) [See the unit on Tool Making Technology for descriptions of sponge spicules and pottery manufacture.]

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Other archaeologists work to develop or clarify regional timelines. What are these timelines used for? Archaeologists establish that a certain style of pottery was made at a certain time, so if they find that pottery type at another site, they can make a good guess at the date of that site. One study focused on the following question: “Will a careful review of archaeological reports show that coastal peoples in northeast Florida had their own unique pottery and lifestyle?” This question has 1) a specific goal – interpreting existing data (along with new date information) – to see if the timelines for northeast Florida cultures can be applied to the coastal peoples too. This study also focuses on 2) a specific location – the coastal northeast Florida and Georgia villages. This study does not excavate or collect samples. It combines the data from earlier digs with new date information about the previously excavated artifacts. (*Archaeologist: Dr. Keith Ashley*)

These three examples demonstrate that archaeology can take many forms. Excavation, environmental sampling, and data analysis are only a few of the methods utilized by archaeologists. Whichever method they employ, one thing is certain. For every hour spent in the field, AT LEAST three hours are spent in the lab. Archaeology has come a long way since C.B. Moore demolished his way through the burial mounds of the southeast.

A CASE STUDY: WET SITE ARCHAEOLOGY AT HONTOON ISLAND

On the following pages, we’ll take a look at the processes archaeologists used when studying Hontoon Island – an underwater archaeological site. Hontoon Island is just south of Timucua territory, in the land of the Mayaca. The Mayaca first encountered the Spanish in the 1560s. Pedro Menendez was traveling south on the St. Johns River, and the Mayaca refused to allow him to pass. When he ignored their decree and rowed on, his ship found the river blocked with a fence of stakes. Menendez had his men break through the barrier and proceed. Soon, at a narrow part of the river, the Mayaca were waiting with archers, and forced Menendez to retreat. That takes guts. It’s also a historian’s view of the people living in this region. Archaeologists depend on artifacts, not stories. They’ve discovered Spanish olive jars and other European artifacts nearby. This suggests that (much later) a mission was located in the area, perhaps San Salvador de Mayaca, noted in Spanish records.



*Courtesy of the Florida
Museum of Natural History
Historical Archaeology
Collections*

The native people living at Hontoon Island produced the giant wooden owl totem as well as the smaller pelican and otter carvings (see the Tool Technologies unit). Because these artifacts were submerged in water, they were protected from the ravages of oxygen. At dry sites, archaeologists find plenty of shell and shell tools, bits of bone, stone tools, and pottery sherds. However, these represent only about 10% of the artifacts made by early peoples. How do we know this? Samples of the other 90%

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have been found at Florida's wet sites, like Key Marco and Hontoon Island. In addition to carvings, archaeologists have recovered fishing nets, wooden mortars and pestles, atlatls, bowls, wedges, canoe paddles, toys, and more. The excavation at Hontoon Island also produced over eighty species of seeds and other plant parts. At dry sites, seeds rarely survive in the archaeological record, unless they've been charred. So, finding 80 different kinds of seeds is truly amazing. Wet sites are unique both because of the wealth of information they provide AND for the challenges they pose. Most excavation in Florida is dry excavation, in which units, perhaps one meter square and a meter deep, are excavated with perfectly smooth vertical walls.

Getting dirty at Hontoon Island: When she started her third excavation at Hontoon Island, archaeologist Barbara Purdy had many research questions. For one, she wanted to utilize wooden artifacts and debitage to study what kinds of wood-working tools were used by this St. Johns culture. She was in the right place. But getting those wooden bits out of the protective muck was no easy chore. She had a permit to excavate a trench 2m wide x 26m long, with a 6m additional trench alongside it. The land sloped down gradually into a lagoon, with five of the 14 units actually in the muck. Things would be getting dirty.

Studying strata (stratigraphy) is a bit more challenging at wet sites. When excavating in wet areas, one muddy cave-in can destroy the stratigraphy because what was on top has tumbled down to mix with lower artifacts. The key to stopping cave-ins is controlling the water, removing it when possible, and preventing it from washing away the walls of your units. That requires multiple pumps and hoses, along with constant problem-solving to prevent water and hoses from collapsing your hard work.

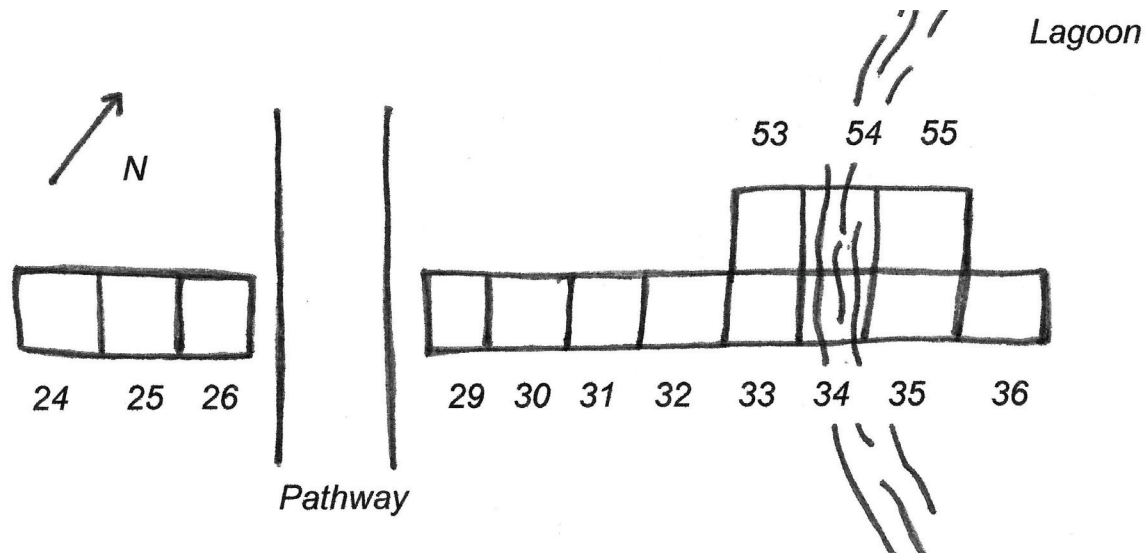
The team started with the dry units first. They created 2x2m squares, cordoned off in a line to form a trench. Often, archaeologists orient trenches North-South. However, in this case, the trench ran from the lagoon area towards the midden. This shell midden, like so many others, had been mined to produce material for road fill in the 1930s. Purdy's team oriented their trench to take advantage of the largest stretch of undamaged midden.

Dry excavation: So, the units are laid out. Excavation at the dry units begins with flat-bladed shovels and flat trowels. Why flat? The sides and bottom of an archaeological unit must be perfectly straight and smooth. Curved digging and scraping tools can't produce that. Excavators began by removing the 2-5 cm of root mass. Then they continued down until they reached 25 centimeters (the depth of all levels in this study). Each 25 cm level holds a cubic meter of shell, soil, and artifacts. That's enough to fill 45 five-gallon buckets. Did we mention that fieldwork is hard on the back? The excavation continued down, level by level, until the water table had been reached (this is when water starts seeping into the unit from underground). The dry materials excavated from these midden units were sifted through screens. Then, the initial measuring and study of artifacts began in the field. Drawings of the strata in each unit were carefully recorded. Later, the soil would be backfilled into these upland units.

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Dr. Barbara Purdy's 1984 trench
at Hontoon Island, Florida



Wet excavation: Now the fun begins. The seven remaining units would be excavated below the water table. Even the ones that were dry up top became a soggy, boggy mess below. How could they excavate careful strata when they couldn't even see through the muddy water? Well, they tried to remove the water. This worked well enough, but there were constant problems. Hoses that were used to pump out water started dragging along the edges of other units, causing cave-ins. And where did archaeologists put all of the water they're pumping out of those units? They can't just spew it back into the lagoon. Tiny artifacts might be floating in that water. Each hose had a piece of fine screen covering the intake hole, but some tiny artifacts might have gotten through anyway. Even if you weren't worried about losing those tiny artifacts, you can't risk those artifacts contaminating another unit – or additional archaeological sites deep under water. So what did the archaeologists do? They used Unit 33 as a holding area for the pumped water. That was a temporary fix, but with the pumps running constantly, Unit 33 was going to fill up fast. They had to empty it continually too.

Pumps: The team used three different pumps. They also invented a variety of homemade gadgets to support hoses and guide the flow of water, eliminating some of its destructive power. The biggest pump pulled water out of the unit that was being excavated, and channelled it into Unit 33, the most upland of the wet units. It had already been excavated, so it could serve as a holding area for water. A smaller pump was used to draw mucky sediment out of this unit when it began to clog. A third pump pulled water out of Unit 33 and sent it to the screening area. The water was poured through fine screens, and any artifacts were collected.

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After screening, this water was pumped over to a nearby area of midden that had been damaged by shell mining long ago. Depositing the water onto a disturbed archaeological site helped to preserve the integrity of the pristine archaeological sites still underwater.

With the water removed, excavation continued. Because artifacts and bits of saturated wood are very fragile, one scrape with a trowel could mean destruction. A process called “water excavation” was required. They used a hose to gently spray water at the base of the unit, collecting the resulting mud in a pan. Any visible artifacts were removed, and the mud went into a mesh-bottom bucket. The liquid that leaked out of those buckets was collected, and the water went back into Unit 33. The draining buckets full of mud and artifacts were screened twice, first through mesh with holes 0.625 cm, the second with holes 0.3125 cm. Needless to say, the archaeologists were finding every teeny-tiny thing in this muck. Stratigraphy was recorded for the wet units as well, but they were not backfilled at the conclusion of the project. During drought years (when water levels drop) these excavated units are still visible.

One year later: Because of drought conditions, the water table had dropped even lower than it had been during the 1984 excavation. The team received permits to excavate two more units, a bit further out into the marsh.

Why bother? If it sounds like a major headache dealing with wet sites, it is. You may wonder why these archaeologists were so intent on excavating below the water table. It’s because wooden artifacts are only preserved in areas that have been completely submerged ever since the items were deposited. If the mud had dried out even once, the wooden artifacts in the mud would have warped and decomposed. Archaeologists have to get wet and muddy, or they have no chance of finding these amazing wooden artifacts.

So, the work was finally completed...right? Not by a long shot. Sure, the excavating was complete. The screening and initial sorting had been accomplished. But much more needed to be done before the data could be organized, analyzed, and published for use by other archaeologists.

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ARCHAEOLOGICAL TECHNOLOGY

LAB – SCREENING FOR ARTIFACTS:



Above: Archaeologist screening artifacts, courtesy of the Florida Public Archaeology Network, West Central Region

Below: Archaeologists screening artifacts with water, courtesy of the Florida Public Archaeology Network, Northeast Region



So, how do they decide which size to use? First, they put the excavated material through the largest screen (1/2") and record what they found. Next, they screen the same material with the 1/4" middle-sized screen. If nothing new is found, just more of the same artifacts (only smaller), you can stick with the largest screen size. It's showing you everything at the site.

However, if any new materials are discovered (like tiny beads or seeds that weren't found before), you'll need to record your finds and proceed to screen the remaining material with an even smaller

BACKGROUND: After artifacts and their matrix have been carefully excavated, they are put through screens to ensure that every bit of available evidence is found. The screens allow dirt to pass through while the artifacts, seeds, and bones remain on top of the screen. Screens with larger openings can allow some of the smaller artifacts to slip through. Archaeologists choose an appropriate screen size based on the conditions at each archaeological site. Common screen sizes have holes that are 1/2", 1/4", and 1/8" in diameter. You will be screening the materials you excavated earlier. In addition to locating the artifacts and biofacts, you will be testing to see which size screen is required at this site.

Testing for appropriate screen size:

INSTRUCTIONS:

You will be testing three screen mesh sizes: 1/2", 1/4", and 1/8". The goal is to find the largest holes you can use without losing artifacts. Why don't archaeologists automatically use the smallest hole-size to ensure that all artifacts are found? The smaller mesh screens clog up more easily as you are working the dirt through them. If the screens are constantly clogging, it will take much longer to screen the material.

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LAB – SCREENING FOR ARTIFACTS continued:

screen (1/8"). Record your findings. If nothing new is found, just more of the same artifacts (only smaller), you can use the middle-sized screen. However, if anything new is found, like a tiny fish bone, then you'll need to use the smallest screen to ensure that you're not missing important info.

In Review: After screening samples through each size, compare the artifacts found. If nothing new is being collected by the smaller screen sizes, you can stick with the largest one for the rest of your excavation. However, if new (meaning different) materials are being found by a smaller screen size, you'll need to use that smaller screen size to screen the rest of your excavated materials.

Starting the Screen-Size Test: Spread foil, wax paper, or newspaper across your work area. This will catch materials that fall through the screen. Start with the bag titled, Unit 1, Level 1. If this bag has no artifacts in it, choose another bag that does have artifacts. Empty just enough material to cover the bottom of the 1/2" screen. Use your fingers to gently stir the material. After the soil falls through, collect the artifacts, and transfer them to a bag labeled Unit 1, Level 1, X cm deep, 1/2" screen. "X"cm is the depth at which you started excavating that level. For the uppermost level in a unit, X = the distance from the top of the container to the surface of the soil. Repeat for any remaining material from the original bag. Save the matrix material (dirt) that falls through the screen to be used in the next stage of the test.

Put the saved material through the 1/4" screen. Store any artifacts and biofacts you find in this screen in a bag titled Unit 1, Level 1, X cm deep, 1/4" screen. Transfer any matrix material that falls through the 1/4" screen into the 1/8" screen. Repeat the process, labeling artifacts or biofacts recovered as "Unit 1, Level 1, X cm deep, 1/8" screen. Put any soil or artifacts that fall through the smallest screen into a bag labeled "Unit 1, Level 1, X cm, for flotation."

Analysis: Record the artifacts and biofacts found in each bag, carefully returning the contents to their properly labeled bag. A list might include 1 shell tool, 1 iron nail, 2 corn kernels, and crushed shell. Compare the lists for each bag. Was anything found in the 1/4" screen bag that wasn't found in the 1/2"? Was anything found in the 1/8" screen that wasn't found in the others? If nothing new was found in the smaller screens, you may continue your screening using 1/2" screen. If new items, like stone debitage, were found at the 1/4" level, you will use the 1/4" screen for the rest of the screening. However, if something tiny, like a glass bead is found only with the 1/8" screen, you will need to use this screen for the entire site. Record your choice for screen size. This completes the screen-size test. Now you may continue screening the rest of the site.

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LAB – SCREENING FOR ARTIFACTS continued:

Screening: Start with the next bag. Perhaps it is Unit 1, Level 2, X cm (X = the depth where you start excavating that level, measured from the top of the container). Proceed with screening the contents in the appropriately-sized screen. After screening the contents of a bag, you can reuse the labeled bag for the artifacts and biofacts you've found. Save the material that goes through the screen (dirt and tiny artifacts and shell) and bag it with the label "Unit 1, Level 2, X cm, for flotation.)

Repeat this process with your third level, bagging the artifacts and saving the remaining matrix materials for the flotation lab.

Now it's time to start on Unit 2. Screen the materials as you excavate, storing any artifacts and biofacts in a bag labeled Unit 2, Level 1, X cm. When you start excavating a unit, X will always equal the distance from the top of the container to the soil surface. You do not need to save the soil for flotation. Archaeologists do flotations on only a small percentage of the materials they excavate from each level. Be sure to sketch/photograph the strata visible in your completed unit.

Did you have any idea that archaeology required so much tedious bagging and record-keeping?

Analysis: Okay, you've collected the artifacts. Now it's time to see what you can learn from them. First, create a master list of artifacts and biofacts found in each CULTURAL STRATA. We're not looking at levels anymore. We're looking at strata.

What did the Contact Period culture (the top one because it's more recent) deposit? What did the prehistoric culture (lower strata) deposit? Once you have your lists, compare them. How are they similar? How are they different? Were they deposited differently (piles vs. sheet midden)? Did they provide answers to any of the following questions?

- a. How did native pottery and tools differ from one culture to the next?
- b. How did agriculture differ?
- c. How did hunting and gathering differ?
- d. What evidence of European contact was found in the upper strata?
- e. What evidence of trade was found in the lower strata (copper)?
- f. Did the evidence support or fail to support your personal Research Question?

On another sheet of paper, record the answers to these questions. Include a description of the two cultures (prehistoric and Contact Period) based on what you learned from your excavation.

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LAB – SCREENING FOR ARTIFACTS continued:

Follow-up: The team who constructed your midden recorded a list of all the artifacts and biofacts they included. Because you were only able to excavate 360 cm³ (6x6x5cm) out of a total 1000 cm³ (12x10x5 cm), you obviously missed some artifacts. Compare your list of artifacts with the list provided by the construction team. What interesting artifacts or biofacts did you miss? Would these have changed your interpretation of the site? In real life, archaeologists have no way of knowing what they missed, of what incredible artifact may have been buried only centimeters away from their last unit. Record your comparison of your excavation and the total midden.

Collect all of your labeled baggies and place them in a storage box. Write your midden's name (located on the container of your model midden) on your storage box. Also, write the full names of both excavators and the date. Proper storage of artifacts is called "curation."

Flotation – Collecting Tiny Artifacts and Biofacts:

Flotation: Even when using very fine screens, there is always the possibility that some useful bit of information will be lost. To address this concern, some samples of muck are returned to the lab to undergo flotation. How does flotation work? The muck is added to water and stirred. The fine mud particles stay suspended in the water. The seeds, charcoal, roots, and nuts float to the top. These floating materials are called the "light fraction," and they are poured through a fine screen so that they can be collected separately. Meanwhile, the bits of bone, chert, and glass beads have sunk to the bottom. When the muddy water is poured off, this "heavy fraction" remains at the bottom, coated in mud. The muck sample may go through flotation several times to ensure that all of the bits have been recovered. The Hontoon Island team also used "chemical flotation." For example, the light fraction bits can be stirred into a chemical that has a different density from water. This affects what will float and what will sink. If researchers wished to separate the seeds from the charcoal, they would use a chemical that allows charcoal to float, while the seeds sink.

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LAB – FIELD FLOTATION:

BACKGROUND: In addition to field flotations, special laboratory equipment has been created that bubbles air through the water. The bubbles help lift the light fraction to the top. Extra funding must be allotted for use of this equipment. Why is flotation so important? Charred seeds easily slip through 1/8” screens. Because they’re the same color as the soil, they go unnoticed at most excavations. In fact, many sites were believed to have no plant remains at all - until flotation was invented in the 1970s. It is important because it opened up a whole new area of study for archaeologists: seeds.

INSTRUCTIONS: Observe a flotation performed by your teacher. Then float your own sample. Pour your first bag of flotation matrix into a container. Fill halfway with water and stir. Gently pour any floating material off the top into your sieve (net) as it rests over a bowl. Any artifacts or biofacts you recover in the net become your “light fraction.” Pour off as much of the muddy water as you can without losing any of the “heavy fraction” sludge at the bottom.

Add more water to the remaining material; stir; and decant (pour off) the floating material at least three more times. Archaeologists can perform up to 6 total flotations on any sample. After you’ve rinsed the light fraction in the net, empty it onto a paper towel to dry. Using tape, attach a baggy labeled “Unit 1, Level 1, X cm, light fraction” and your name to the paper towel so you’ll be ready to bag it when it’s dry.

PHOTOS OF THE FLOTATION PROCESS



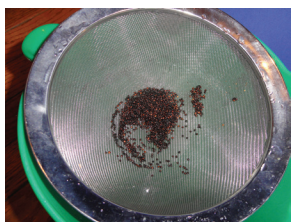
Sample before flotation



*Charred Seeds Float,
Flotation #1*



*Fewer seeds float,
Flotation #2*



*“Light Fraction” -
total seeds recovered in 4
flotations*



*“Heavy Fraction” - glass
beads and mud at the bottom
of the Bowl after 4 flotations*



*Heavy Fraction” – glass
beads sieved and washed*

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ARCHAEOLOGICAL TECHNOLOGY

LAB – FIELD FLOTATION continued:

What do we do with the heavy fraction? Add a bit of water to the mix of sludge and artifacts at the bottom of your container. Slosh it around, then pour the material into your net sieve. Rinse with a water sprayer if available. Place on a paper towel to dry. Attach a baggy labeled “Unit 1, Level 1, X cm, heavy fraction.” Bag it later when dry.

What if you don’t find any artifacts? That means that you were catching everything with your screens. Repeat these steps with the other 2-3 bags of flotation materials you recovered from Unit 1, bagging them and labeling them appropriately.

Choose one light fraction that includes plant materials (if any) and one heavy fraction that includes artifacts (if any) and use a pencil tip to carefully count each seed or bead. Add this information to your final report.

Analysis: Identify the materials in your light fractions and heavy fractions. Make a list of both for each Cultural Layer, prehistoric and Contact Period, (not for each level). How do the light and heavy fractions differ between prehistoric and Contact Period? Did you find anything you hadn’t found before? Compare your findings with the construction record for this midden. What (if anything) have you learned from the flotation that you did not learn from the screening? How has this changed your interpretation of the midden? Does it support or fail to support your Research Question?

HOW OLD ARE THESE ARTIFACTS?

Radiocarbon Dating: Discovering the age of artifacts is a primary goal of most excavations. What materials can be carbon-dated? Anything that was once alive (any plant or animal material) can be carbon-dated. How does this work? It measures a radioactive form of carbon, C-14. This atom doesn’t emit enough radiation to harm anyone, but it does eventually decay into a stable form of nitrogen. Only one in one-trillion carbon atoms is a radioactive C-14.

Living organisms constantly exchange carbon with the environment, through photosynthesis, eating, and breathing. C-14 is absorbed at a constant rate, and exhaled at a constant rate...until the organism dies. Once the eating and photosynthesizing stops, no more C-14 can be absorbed. However, C-14 does continue its slow rate of radioactive decay. Its half life is 5,730 years. So, after 5,730 years, half of the organism’s C-14 will be gone. After another 5,730 years, half of that will be gone. And so on. By comparing the amount of C-14 in an ancient bone with the amount that should be in a living bone, archaeologists can estimate how old the bone actually is. This form of dating works well for items as

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old as 50,000 years. But the system has its flaws. The amount of C-14 in the atmosphere today is very different than it was 10,000 years ago.

Why? For one thing, today, C-14 is being created at a slightly higher rate than it is decaying. This means that it's being produced faster than it's disappearing. In the past, the rate of C-14 production was less than its rate of decay. It was disappearing faster than new C-14 was being produced. How is C-14 created?

- The sun's rays create neutrons in the upper atmosphere.
- These neutrons smack into a nitrogen (N-14) atom.
- Voila, C-14 is created.

This natural change in the rate of C-14 production influences the amount of C-14 in the air. Humans have made significant changes too. Since the Industrial Revolution, humans have been burning fossil fuels at an ever-increasing rate. The combustion process expels huge amounts of STABLE carbon into the atmosphere, decreasing the ratio of C-14 to far LESS than 1/trillion atoms. So, the Industrial Revolution decreased the ratio of C-14 in the air. That all changed in the 1950s when nuclear weapons testing began. The release of nuclear radiation tipped the balance so that C-14 levels nearly doubled.

These kinds of changes wreak havoc with attempts to use C-14 as a dating tool. The C-14 raw data must be carefully calibrated to compensate for these changes, or your date could be up to 1,000 years off. A calibrated radiocarbon date will be expressed as "cal 1525 CE."

How have scientists determined the amount of C-14 in the atmosphere in 1525 CE? Dendrologists (studiers of tree-rings) have measured the C-14 in ancient trees to use as a baseline for comparison.

Thermoluminescence Dating: This test is usually performed to confirm a site's radiocarbon date, or to provide a primary date if there were no organic remains to be carbon dated. Thermoluminescence can date anything with a crystalline structure, including chert and pottery. How does it work? Well crystalline structures are never perfect. They always have tiny imperfections. These imperfections can capture electrons created by background radiation (cosmic rays and radioactive minerals like uranium). As soon as a quartz crystal is formed, it begins collecting radiation. This collected radiation, however, can be wiped clean by exposure to very bright light or intense heat (at least 350°C).

In the Pyrotechnology unit, we learned that Florida's fire-treated chert is heated to 350°C, and that fired pottery must reach 760°C. When humans fire chert or clay (both crystalline), they remove all of the accumulated radiation. This "zeroes" the radiation amount. Eventually, after the stone point or pot is no longer in use, it finds its way into the soil - interred in a burial mound, tossed into a midden, or simply lost. Once it is buried, it is no longer subject to heat (pots being cooked) or intense sunlight, which might wipe out the radiation again. It just collects radiation at its normal slow pace.

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When an archaeologist runs a thermoluminescence scan, she subjects the artifact to heat greater than 400°C and measures the amount of light released by the artifact. The brighter the light, the more electrons are being released. More electrons mean the artifact has been lying there soaking up radiation longer. It's older. Like radiocarbon dating, thermoluminescence requires calibration to account for variation in the amount of cosmic rays or nearby radioactive minerals that the artifact has been exposed to.

NOW YOU'VE GOT THE ARTIFACTS. WHAT DO YOU DO WITH THEM?

Curation: This is the long-term storage and maintenance of both artifacts and the primary research documents that go with them. For example, suppose you find a dried-up lake in Alachua County with 100 exposed native canoes. Where would you store them all? In the year 2000, this actually happened. Because the canoes were in too poor a state to be moved, the task of curation did not come into play. But even a single well-preserved canoe presents serious storage issues. Left in the air, even for a short time, the wood will warp and crack. It will need to be submerged in a vat of PEG solution for one to three years. Most archaeologists don't have space for a canoe-sized vat in their offices...if they even have offices.

Curating the smaller objects can also be a challenge. The single 3x3 m unit excavated at Hontoon Island in 1980 produced 5,777 pieces of bone, 3,624 pieces of wood, and 3,265 sherds of pottery. Where do you store it all? Before the digging starts, archaeologists must plan for storage of the materials they excavate. This isn't just storage for a week or even a year. It's storage *forever*. And the storage facility needs to catalog where each collection is located so it can be retrieved for future study. In the past, most storage facilities charged a one-time fee "in perpetuity." During 1998 in the southeastern states, it cost between \$68 and \$200 to curate one cubic foot of material. That gets expensive fast. And who pays for this? The archaeologist? A university? A museum? The government? These questions must be addressed prior to ever setting foot in the field. To complicate matters, many storage facilities are now charging a price per 5, 10, or 15 years of storage. So the question of "who pays" will come up again and again.

Preservation: So, you've got a place to store what you find. You also need a plan for making it last. Pottery and stone tools stand up fairly well on their own, but perishable items, like bone and wood dry, crack, and warp after being submerged. Wood in particular requires intensive preservation.

When wood is under water for long periods of time, bacterial processes break down the cellulose that makes up the hard parts of the wood. The wooden artifact then soaks up water like a sponge, filling all of the spaces once filled with cellulose. The water inside the wood cells helps the artifact to hold its shape. However, once the artifact is removed from its watery environment, the water in all of those

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internal spaces begins to evaporate. Without water to support the artifact, it cracks and warps fairly quickly. Many of the wooden artifacts discovered at Key Marco in 1896 were lost to just this kind of warping.

Keeping wooden objects submerged after discovery is a good short-term solution. But something more permanent (and lighter than vats of water) is needed for permanent storage. Currently, the best answer is PEG - polyethylene glycol. PEG is a synthetic substance with a consistency something like waxy Vaseline. The goal is to replace all of the water in the waterlogged artifact with PEG. The PEG inside the wood will provide support, so the artifact won't warp. The PEG on the outside of the artifact provides a protective barrier to prevent cracking. Sound simple? It's not.

The artifact starts out submerged in heated water. Bit by bit, small amounts of PEG are added to the water (a bit of fungicide to prevent slime growth is tossed in too). Eventually, when about 70% of the water in the artifact has been replaced by PEG, the artifact is ready to come out of the vat. After it cools, excess waxy PEG is removed. The artifact may be darker than it was before, but it won't collapse, shrink, or warp. The process can take from several months up to three years, depending on the condition of the artifact.

If the artifact being treated is a 5.6 meter (18") native canoe, that's an expensive and space-consuming process. How expensive? In 1997, using PEG to preserve a wooden artifact that was 6' x 1' would cost \$3,500. This included the price of a vat, heaters and pumps, and an actual ton of PEG to be used in the restoration process. Today, when canoes are discovered submerged in water, they are generally left there, where the natural environment can handle the preservation on its own.

WHAT YOU'VE LEARNED AND HOW YOU TELL OTHERS

Analysis and Publication: You've completed your excavation, preservation is under way, and storage for materials is arranged. You've got an incredible amount of data to sift through. The radiocarbon and thermoluminescence dates you got back don't really mesh with the historical context you were trying to prove. Next, you've got to figure out what it all means. Fortunately, in any scientific study, there are no wrong answers. If the data does not support your hypothesis, then it helps you and other researchers pose new questions for study. In fact, many archaeological reports end with a section that includes suggestions for further study.

What happens to these reports? Archaeologists are ethically bound to publish their work. Why? It's because excavations destroy the archaeological resource they're studying. Once excavated, that particular unit can never be excavated again. The excavation process is destructive by its very nature. Modern archaeologists collect incredible amounts of data AND they leave part of the site unexcavated, but at the end of the day, much of the site has still been destroyed.

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When they publish their findings, it helps to compensate for the loss of the original resource. Other archaeologists can't excavate the original unit, but they can review the data collected for use in their own studies. Because of time and funding restrictions, many reports take years to complete and publish. Some are never made public. In these cases, individuals can ask for permission to review the unpublished data, by requesting it from the land owner, project leader, or the lead archaeologist.

Where do archaeology reports get published? There are a variety of scholarly journals, but if you are researching Florida archaeology, the place to start is *The Florida Anthropologist*, a publication first produced by the Florida Anthropological Society (FAS) in 1948. All of the back-issues are available online at <http://ufdc.ufl.edu/?s=flant>. This is another form of curation. By digitizing all of the past issues, the FAS is ensuring that other researchers can access these reports. If you are interested in learning more about Florida archaeology, this website is a great resource. However, you can't just go to their main page and type "spiculate clays" hoping for a response. It will tell you that it can't find those words. The best way to access this online resource is to use a search engine like Google to find which issue of *The Florida Anthropologist* you want. By typing "Florida spiculate clay" into Google, the second hit is "Florida Anthropologist, Vol. 25, No. 2." Click that link, and you will go to a virtual copy of the publication you want. NOW, if you type "spiculate clays," the search function can search that specific volume. It will offer you a list of each page where this phrase occurs. There's a wealth of information there. It just takes a bit of *digging* to reach it.

Some archaeologists produce books about their research, written in layman's terms, so that anyone can enjoy and learn from them. Dr. Jerald T. Milanich has published a number of books on the Timucua, Florida's prehistory, and the Spanish missions. Dr. Barbara Purdy has produced several books on wet-site excavation and artifacts as well as prehistoric stone tools. These, and the publications of other archaeologists, are available at most Florida libraries. Check them out.