

**B**ARBARA A. PURDY, Professor Emeritus of Anthropology at the University of Florida and Curator Emeritus at the Florida Museum of Natural History, may have got off to a slow start out of the archaeological starting gate because she accepted the marriage proposal of Laurence Henry (Hank) Purdy on Valentine's Day in 1948. Hank was on track to become chair of the Department of Plant Pathology at UF, and Barbara devoted herself to raising four children during the '50s and '60s. While typing dissertations for students and working on her master's degree in archaeology, she discovered an all-consuming love of the field and began work in the fledging Ph.D. program in archaeology as soon as she and Hank arrived at the University of Florida. That's when she made a dash for the archaeological finish line, sweeping past earlier starters in the home stretch!

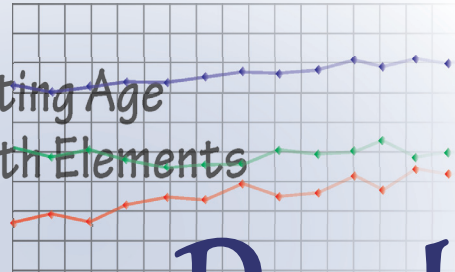
"In 1969," Purdy remembers, "I was chosen, along with three others, to participate in the first-ever flintknapping session funded by the National Science Foundation and taught by Don Crabtree in Shoshone Falls, Idaho. That was a big plus in my future life."

Her eldest daughter, Cynthia Bertelsen, testifies how dissatisfaction with women's role in the archaeology community spurred her mother's achievements: "When Mom discovered archaeology, she found something that enveloped her completely, something outside of family that she could devote her life to. She wasn't satisfied with the things that many women appeared to be satisfied with in those days. Entering academia at the time she did, when some of the taboos were being broken by other women like her, was no easy feat. It took some grit, especially when managing a household with four children and a husband who

**Purdy with Paleo Dog in situ.**

didn't always understand the demands faced by a full-time graduate student. Archaeology gave Mom a place in the world where she was her own person. And it took her far. She's still enamored with it all."

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# Barbara Purdy

## Paleo Dog: artifact or geofact?

The university knew that Purdy, the first person to earn a Ph.D. in Anthropology from UF, was something special. In 1971 they welcomed her to the faculty of the Department of Anthropology. That was the year her research on stone toolmaking and

the method ancient Floridians used to heat chert to facilitate flintknapping was published in *Science* magazine.

One of Purdy's early Florida dig sites was on property in Marion County then owned by the Container Corporation of America. (The property was subsequently purchased by William J. Whitehurst and is now called Whitehurst Cattle Company. The new owner has graciously granted Purdy access to the land and permission to excavate as extensively as needed.) From the top layers of sandy soil Purdy recovered artifacts 5000–13,000 years old. In the hard, dark clay underneath, a layer declared culturally sterile by earlier archaeologists, she turned up stone tools and art objects that bore a strong similarity to Late Stone Age artifacts from Europe. On the same property she found a massive chert boulder 1½ m long. Her attention was caught by contours that suggested the eye, snout, and limbs of a canine,

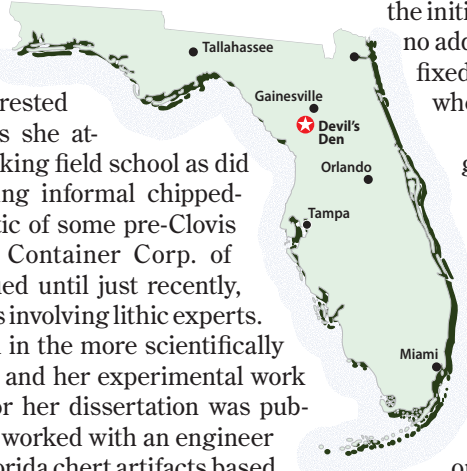
and moreover appeared to her to be of human agency. She dubbed the object "Paleo Dog." Although other unmistakable chert artifacts were recovered around and below it, Paleo Dog was met with skepticism by attendees at a meeting of the



ALBERT GOODYEAR

Florida Anthropological Society, and Purdy reburied it in 1978.

“I first met Barbara in 1975 at a SEAC conference in Gainesville, Florida,” says colleague Al Goodyear. “At that time she was excavating chert quarries in Marion County and interested in prehistory. In the early ’70s she attended a Don Crabtree flint-working field school as did I, which focused on recognizing informal chipped-stone technologies characteristic of some pre-Clovis artifacts. Her work with the Container Corp. of America lithic site has continued until just recently, conducting workshops and tours involving lithic experts. She has always been interested in the more scientifically based research in archaeology, and her experimental work with thermally altered chert for her dissertation was published in *Science*. After that she worked with an engineer to develop methods of dating Florida chert artifacts based on the degree of weathering. Added to this, she pursued wet-sites archaeology, paleontology, and popular publications for the public using typical examples of Florida stone tools. An instance



of the latter, *Florida's Prehistoric Stone Technology*, is a reprinted classic for professionals and avocationalists alike. Perhaps her most endearing quality has been her stubborn bulldog-like approach to practicing archaeology in spite of critics who didn't always appreciate her approach. I suspect that future archaeologists and members of the public will be grateful for her foundational work.”

**Mammoth engraving**

When a fossil bone bearing a remarkable engraving of a mammoth was discovered at Vero Beach, Purdy led a team of scientists in a thorough forensic investigation of the piece (MT 27-1, “Mammoth engraved on bone from Florida”). The small engraving, an amazingly accurate depiction of a mammoth, reminded her of the artistic styles of the European Upper Paleolithic. She believed that, if found to be authentic, the small bone would support the hypothesized relationship between Paleoindians and the Paleolithic cultures of the Old World.

The team subjected the bone and its engraving to many tests. It's a fragment, 6.3 cm long and 1.6 cm wide, of a long bone from a large mammal. Its curvature suggests it may have come from mammoth, mastodon, or giant ground sloth. Being highly mineralized, it didn't contain enough collagen for radiocarbon dating. Nevertheless its provenance was obviously a Pleistocene megamammal, larger than any Holocene animal.

To determine its age the team measured relative concentrations of rare earth elements (REEs) in the

engraved bone. When the process of fossilization begins, REEs are present in the bones at known relative concentrations. After the initial uptake at approximately 10,000–30,000 years, little or no additional uptake occurs, making the REE concentrations a fixed signature. Thus REE analysis can be used to date fossils where absolute techniques don't work.

Purdy's team compared the REE signature of the engraved bone with those of bones of extinct mammals from the Vero Beach site, now housed in the collections of the Florida Museum of Natural History. The REEs of the engraved bone agreed with those of other fossil bones found at Vero Beach. The engraving viewed under a microscope showed smooth, rounded margins, and the coloration and degree of weathering of the troughs matched the rest of the bone. A test incision made with a razor blade differed markedly from the original cuts of the engraving. Not only did energy-dispersive x-ray spectroscopy find no evidence that the engraving was made recently, it also revealed additional geometric engravings that frame the mammoth image. This frame was engraved before the bone was broken.

Their investigation complete, the team concluded that “all scientific evidence is consistent with the incisions mineralizing simultaneously with the surrounding bone surface.”

Future studies and the application of new methods may remove



Purdy in backhoe trench at the CCA site, 2000. The white sand deposit at top contains stone remains dating 5000–13,000 yr B.P. At the bottom of hardpan begins controversial clayey sand with ancient artifacts.

any doubt about the antiquity of the engraving and could verify the claims made by E. H. Sellards in 1916 that human skeletal remains were found at Vero Beach in apparent association with the bones of Ice Age megafauna. Even more amazing, the similarity of the Vero Beach mammoth engraving to the artistic style and subjects of the Old World Paleolithic would have tantalizing and far-reaching implications for a more direct Ice Age connection between North America and Europe.

“I've known Barbara ever



Purdy excavating waterlogged archaeological and environmental components at Hontoon Island, Volusia County, Florida, 1980.

since I was in graduate school,” says friend and colleague geochronologist Tom Stafford, “when I wrote and asked if the thermoluminescence she was doing would work on heat-treated cherts. Ever since I’ve been awed by her ability to combine archaeology with other sciences to understand the prehistory of Florida in ways only now being accepted. Her drive to understand that humans were in the Americas before Clovis, long before it was even remotely accepted as a research direction, defines her iconoclasm and ability to see what others can’t envision. She doesn’t take ‘no’ or ‘it’s impossible’ from anyone, and she provides the evidence why she is

**Purdy screening excavated chert remains at the CCA site, 2017.**



right. She has written more in one lifetime than most of us could have done in twice the time, and the effect of her publications has changed ingrained paradigms, all to the benefit of archaeology. We mortals can only hope to have her focus, stamina, and impact. Thank you Barbara, for being a friend and colleague for all these years.”

### Underwater Pleistocene fauna and human remains

Human skeletal remains of several individuals discovered apparently associated with the bones of late-Pleistocene mammals were recovered in the early 1960s during an excavation at Devil’s Den sinkhole in Levy County, Florida. Bones of late-Pleistocene mammals are abundant in Florida, and at some locations they were recovered alongside artifacts dated to the Paleoamerican period. A few sites contain human bones, but convincing proof of the antiquity and genetic relationships of the human skeletal remains in Florida has suffered from the lack of sufficient surviving collagen for radiocarbon dating and DNA analysis, owing to the mineralization and leaching of the bones. Although DNA sequencing of specimens several hundred thousand years old has been successful in other parts of the world, this isn’t the case in Florida.

Devil’s Den is important because of the significant number of human bones found there, a rarity among Paleoamerican sites. REE analysis verifies the coincident age of humans and animals at this important site.

Devil’s Den isn’t a spring, since it doesn’t flow onto the surface.

It’s a collapsed feature, called a karst window, that exposes subterranean flow, which traps fossils. The year-round 72°F temperature of the water causes vapor to rise into the air on winter mornings. Early-nineteenth-century settlers christened the place Devil’s Den, since the vapor suggested fires from the underworld. Local residents used it as a swimming hole for much of the nineteenth century, and it’s now a popular spot for cave divers. In the 1960s divers found the bones of at least five humans intermixed with at least eight genera of extinct Pleistocene animals, including the North American spectacled bear, southern bog lemming, ground sloth, dire wolf, Pleistocene horse, and peccary, along with remains of still-extant species like squirrels, opossums, and foxes.

Until recently published reports about Devil’s Den appeared only in the form of dive records. Four lateral passages (sometimes called caves), 1.5–27 m below the current water level, lead off from the main sinkhole. The passage known as Chamber 3, about 21 m deep, yielded most of the fossil material, which was collected underwater. The geology of the area suggests that bones were deposited during two periods, one at 7000–8000 yr B.P. and another that appears to be slightly more recent. Both were Holocene deposits, but Purdy and her colleagues are convinced that most in situ fossils at Devil’s Den date to the latest Pleistocene, about 13,000 yr B.P.

### Seeking more convincing proof at Devil’s Den

Human bones from Devil’s Den and at least three other Florida sites (Vero, Melbourne, and Warm Mineral Springs) can’t be dated using radiocarbon dating or accelerator mass spectrometry because of poor preservation. Purdy and her colleagues therefore resorted to REE analysis, the same technique they successfully used to date the engraved mammoth bone. They analyzed 89 samples from specimens collected during the 1960 excavation, along with a control group of modern specimens. Using a Dremel rotary drill, they collected 5–10 mg of subsurface bone from each sample, then measured differences in concentrations of REEs to determine the relative age of each bone. All tests indicated a significant difference between the mean of the modern samples and the means of the extant, extinct, and human samples. Final results show that REE concentrations of in situ human remains are statistically indistinguishable from those of late-Pleistocene fauna, which signifies that humans and megafauna lived contemporane-



### Suggested Readings

Purdy, B. 2008 *Florida’s People During the Last Ice Age*. University of Florida Press, Gainesville.

——— 1991 *The Art and Archaeology of Florida’s Wetlands*. CRC Press, Boca Raton.

——— 1981 *Florida’s Prehistoric Stone Technology*. University of Florida Press, Gainesville.

ously. That's the good news. The bad news is that Devil's Den is now a private park, which makes further excavations unlikely.

Other important Paleoamerican sites in Florida haven't received the attention they deserve, but the REE relative dating technique may change that in the future.

### An enduring interest in waterlogged sites

Purdy worked with archaeologist Richard D. Daugherty of Washington State University at the Ozette site on the Olympic Peninsula of Washington State in the mid-1960s before moving to Florida in 1967. Around 1700 the extant village of the Lake Ozette Makah tribe was entombed by a massive mudslide. The Makahs, who trace their heritage to 2,000 years ago, continued to occupy the region, and their former village remained buried until tidal erosion following an enormous storm in the early 1970s exposed remains. More than a decade of excavations recovered tens of thousands of wooden artifacts including tools, fishing gear, weapons, and toys. "Almost immediately upon arriving in Florida until now," Purdy explains, "I have spent about 50% of my time excavating, preserving, and studying fragile perishable materials (wood, weaving, etc.) that wouldn't have survived if they hadn't been entombed in oxygen-free environments" (MT 37-1, "Perishable technologies: A window into understanding Paleoindian material culture"). "These usually perishable materials exponentially increase the archaeologist's ability to gain a more holistic view of ancient cultures other than stones and ceramics."



Purdy among obsidian at Paulina Falls, Idaho, "Doing what you like to do," 2011.

### A brutal episode in Florida's history

In two of her books, *West of the Papal Line* and *The Precise & True Story of Terra Florida in 1564–1565*, Purdy examines a ruthless incident in Florida's history. The deadly territorial conflict between France and Spain that led to the destruction of Fort Caroline by Pedro Menendez, and his brutal execution of over 100 French Huguenots in 1565, are brought to life in these factual stories of ill-fated European colonies, questionable leadership, destructive hurricanes, and human slaughter. The books also include extensive information about the native peoples of Florida and the political scenes in Spain and France. While teaching a course in Florida archaeology at the University of Florida, Purdy became fascinated with this last phase in the turn from prehistory to history. The savagery of these two European countries stands in marked contrast to the primitive yet steady state of the native populations.

### A tenacious, determined academic

Purdy has investigated sites in Washington, Idaho, Arizona,

and Florida. She has written seven books and edited six, published dozens of articles, organized two international wetlands conferences, and participated in conferences in numerous European and Latin American countries. It's no surprise, then, that she won the 1985–1986 Teacher of the Year award in Liberal Arts and Science at the University of Florida.

"Barbara has been a major leader in Florida archaeology for decades," says colleague Bruce McFadden, who collaborated with Purdy on studies of Devil's Den. "Always encouraging, she has been an innovative mentor and role model to many others."

In 2013, Purdy received the ultimate tribute: A newly identified prehistoric Florida tool type, the Purdy uniface, was named in her honor. Widowed in 2015, she is nowhere near retired. At 94 she enjoys teaching her grandchildren and great-grandchildren how to flintknape using a hardened moose antler, and she has established an archaeological research endowment at the Florida

Museum. She is still active at conferences and in fieldwork. Recently she wanted to do an archaeological wellness check on her old friend Paleo Dog and re-excavated him for the first time in nearly 40 years. He looked just as she remembered, and in her field journal she wrote, "I am more convinced than ever that the CCA site has a human component dating to before the Last Glacial Maximum."

It's comforting to learn that Barbara Purdy's achievements haven't gone unnoticed. The Florida Anthropological Society for Outstanding Research and Outreach in Florida Archaeology, at a banquet in their annual meeting in Miami on 7 May 2022, bestowed upon her the Lifetime Achievement Award.

"I got started kind of late in archaeology," Purdy says, "and I just want to keep going." She shows no signs of slowing down, and still pitches her arguments to naysayers who don't agree

After returning from the Crabtree flintknapping session at Shoshone Falls, Purdy practices her flintworking skills in her backyard, 1969.



with her theories about the peopling of the Americas. And her hands are certainly no strangers to red silicone gloves. 

—Martha Deeringer

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