

## February 28, 2008: A Whale of a Good Time

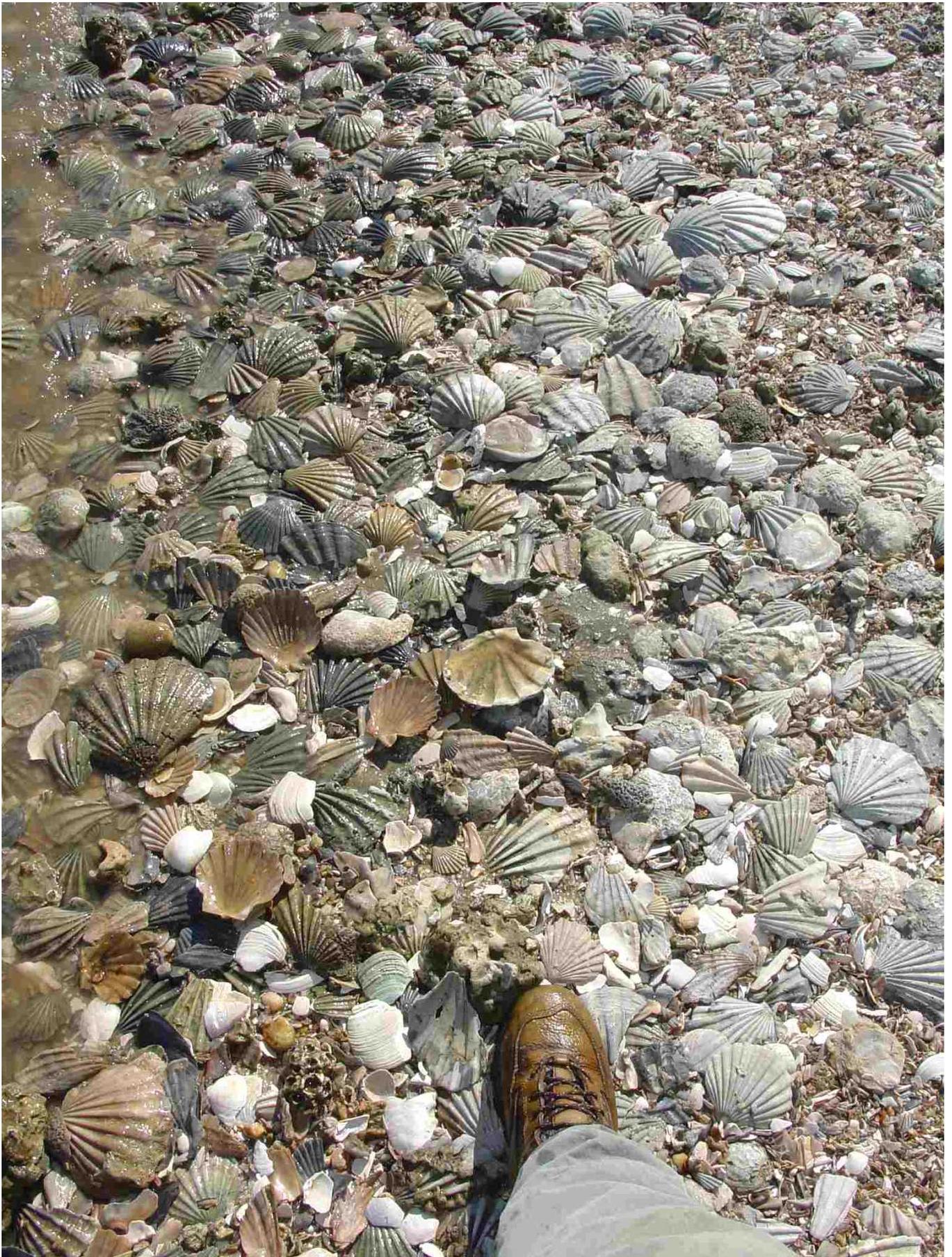
After talking about it for months I finally got on a plane and flew to Washington, D.C. for a long weekend of area fossil collecting guided by my good friend Ron Hunter who lives in the area. Much of our collecting would be in tidal areas so we planned visits to highest priority sites around lowest tides accordingly.

Our first day was spent working a half mile stretch of private beach along a Virginia coastal river. Ron drove us past the landowner's house and down a narrow lane through the woods with limbs and vines slapping his Explorer all the way. A short walk down to the water's edge opened up a panoramic strip of pristine beach which wrapped around a steep 40 foot bluff. The waterline was littered with huge 6-8 inch *Chesapecten* (scallop) shells of several species dominated by Virginia's state fossil *C. jeffersonius* which is the first fossil documented in America, is named after Thomas Jefferson and has roughly 9+/- ridges radiating through its shell. More abundant is *C. madisonius*, distinguished by having roughly 12-15 ridges. It is named after James Madison. Less abundant is a smaller form with more ridges, *C. nephrens*. There were so many *Chesapecten* shells that one could not help but crush them while walking along picking up the better ones. Some had both valves articulated, meaning they were fused together in living position for a wonderful 3D presentation in fossil form.

The beach graded up into a layer of consolidated shell hash, the waterline and this more consolidated horizon known as the Yorktown formation, a Pliocene marine sequence about 4.5 million years old that was laid down in 40-50 foot seas. We even grabbed a few examples of multiple *Chesapecten* specimens cemented together by matrix, in the upper part of the Yorktown section, giving an interesting snapshot of the paleo sea bottom. *Chesapecten* were not the only specimens of interest found in the Yorktown however. While walking the water's edge we picked up many pieces of whale bone, mostly deep brown in color. Most pieces were worn beyond recognition, but many were in good condition.



**FIGS 90-93:** Breathtaking views of site 438. Everything you see here is a 4.5 million year old fossil









**FIGS 94-99:** Examples of *Chesapecten jeffersonius* (9 ridges), *C. madisonius* (12 ridges) and *C. nephrens* (a8+ ridges) from the Pliocene Yorktown and Eastover formations are shown on this and the next 2 pages. Some specimens have both valves articulated. Note presence of *Balanus* barnacles on several specimens and the huge single *Balanus* (Site 438)







**FIGS 100-104:** Unidentified whale bones from the Yorktown fm (Site 438)







I was pretty happy with the whale finds but Ron seemed somewhat crestfallen by our productivity level. His last trip had produced 3 large associated whale vertebrae among other things, and he thought that our mid winter visit would present a beach littered with large verts and other bone sections. He could tell that somebody had beaten us to the punch by a couple weeks. A later conversation with the landowner confirmed Ron's suspicions, and apparently some university types had preempted us.

The game wasn't over however. The sediments in the bluff overlying the Yorktown fm comprised the Eastover formation, another Pliocene (3.7 MYA) marine depositional sequence bearing similar mollusks and whale material. We spent some time climbing and scanning the bluff picking out mostly nice articulated *C. jeffersonius* and *C. madisonius* scallops and one good example of the very thin shelled *Placopecten clintonius*. In addition we pulled a few ornate gastropods *Ecphora quadricostata* among other mollusks.



**FIG 105:** Ron Hunter scratching out an *Ecphora quadricostata* gastropod which later crumbled on the way down the Eastover fm bluff (Site 438)



**FIGS 106-107:** Several *Chesapecten jeffersonius* specimens in situ above, nice *C. nephrens* valve below, both from the Eastover fm (Site 438)

But the slam dunk find was something I stumbled into: the end of a big chunk of whale bone jutting out of the bluff. With a rock hammer I clawed at the compacted sand and hacked away interceding shells to core a tunnel all the way around the bone. The large bone section appeared to go on forever straight into the bluff and the deeper I dug, the more I bloodied my knuckles as they came into contact with jagged shells in tight quarters. In fact they soon looked as if they had gone one too many passes over a cheese grater. Once I noticed my own blood dripping on this bone there was no walking away from it.

Ultimately Ron drifted over to suggest that we move on, and by this time I could see that the bone would not come out easily. I pushed and shoved and kicked but the cantilevered bone wouldn't budge. In the end I put my back against the bluff, got both feet against the end of the bone, and put all my strength into the most important leg press of my life...and the bone acquiesced and snapped off way back in the exposure as far back as I had dug. While it would have been impossible to get the whole bone without taking down the bluff, I was able to stumble out with the largest fossil bone I've ever encountered, later identified by some local collectors as a partial mandible of a mysticete (baleen whale).

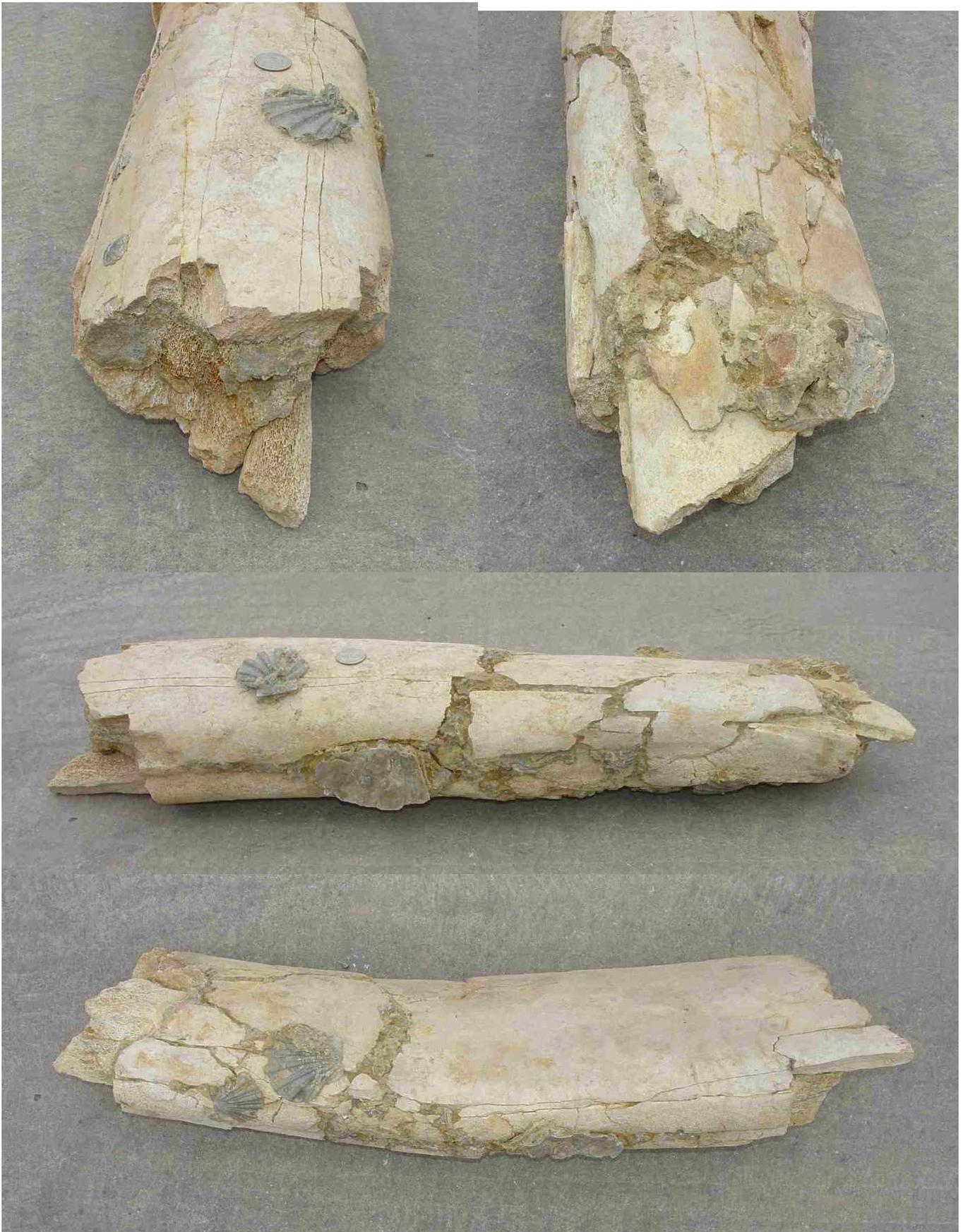


**FIGS 108-118:** This and the next 5 pages show a huge section of unidentified baleen whale jaw taken from the Eastover formation (Site 438)











We lugged about six 5 gallon buckets of material back to the truck, and on my final load I looked down and spotted a bonus find: a worn but identifiable example of the echinoid *Leodia (Mellitella) caroliniana* in the Yorktown float.



**FIG 119:** Yorktown echinoid *Leodia (Mellitella) caroliniana* (Site 438)

We stopped by the landowner's house and chatted for a while in the icy wind. He gave Ron a nice dolphin vertebra and then in one of the most magnanimous gestures I've ever experienced in collecting he led me over to a tree, pointed to a mass of rock and cemented shells on the ground, and told me it was a gift to me. It didn't take long to notice the 2 articulated whale vertebrae in the rock with processes jutting out on both sides. I was floored and quite appreciative as this will make a one of a kind display at my house. Now I need to figure out how to get 2 giant bone sections home, each tipping the scales at nearly 50 LBS.





**FIGS 120-121:** Adult dolphin vertebra from the Yorktown fm (Site 438)



**FIGS 122-126:** Two large and unidentified, articulated whale vertebrae in matrix, partial transverse and spinous processes attached, Yorktown fm (Site 438)









### February 29, 2008: Leaping on Scientists Cliffs

As my eyes scanned the fallen blocks of gray clay they instinctively snapped back and locked on a curious oval object...

On this particular Leap Day Ron and I found ourselves living an experience far more memorable than any other Leap Day. Earlier in the month I was contacted by a veteran of the Dallas Paleo Society asking if I could send Smithsonian volunteers Marge and Steve Noel to some South Texas sites as they would be in San Antonio for a few days. The drought made it tough, but I was able to send them to a few spots that produced some echinoids and other material to their liking. Conveniently and quite coincidentally, I had already paid for my plane ticket to Washington D.C. to collect fossils for a long weekend and soon found myself on Marge and Steve's turf. They were able to boomerang the favor by setting up a visit to Scientists Cliffs, MD. This is a private section of the world famous Calvert Cliffs, a network of coastal beaches and adjoining bluffs which give up coveted Miocene (15-18 MYA) marine finds including whale, shark, ray, fish, and dolphin remains in addition to mollusks and occasional echinoids.

Our guides for the outing were Pam and Bob Platt who run the Calvert Marine Museum. In the early afternoon in anticipation of low tide we all headed down to the narrow strip of beach made narrower by buffeting onshore winds that weaved through my various layers of clothing and reminded me why I moved to Texas all those years ago...but fossils drew me back to the frigid northern latitudes, if only for a short and maniacal blitzkrieg.

Our march north gave glimpses of shark teeth and bone fragments in the lapping, frigid surf, and Pam scooped out a few bones and shark teeth and handed them off to me. Sharp eyed Ron soon laid hands on a nice snaggletooth upper tooth, *Hemipristis serra*. I dropped to my knees on a small shell pack and grabbed a very nice juvenile dolphin vertebra, followed by a similar find for Ron.



**FIG 127:** Scientist Cliffs showing Calvert fm low in bluff and Choptank fm high in bank (Site 439)



**FIG 128:** Pam Platt properly attired and equipped for a winter outing at the Cliffs (Site 439)

As we headed up the shore Pam pointed out the gray clay of the Calvert formation at and slightly above the shoreline and the overlying yellow sands of the Choptank formation in the bluffs, the latter actively eroding and dropping innumerable shells to the foot of the exposure. Back to the beginning of this segment...as I grabbed the light gray oval object from the fallen clay I was ecstatic to realize it was a small whale vertebra which Pam identified as a cervical vert. This was my favorite personal find from this site, my first nice whale vert ever. Just before doubling back I landed a nice sized shark tooth above the surf line.



**FIGS 129-130:** The author's first Miocene whale vertebra (Site 439)







**FIGS 131-133:** Various shark teeth including *Hemipristis serra* (snaggletooth shark), *Carcharias* sp. (dusky shark), *Negaprion brevis* (lemon shark), and *Galeocerdo* sp. (tiger shark) as well as *Myliobatis* and *Aetobatus* stingray pavement teeth above, dolphin vertebra below (Site 439)



**FIGS 134-135:** Another view of the dolphin vertebrae above, various sunfish and whale skull and ear bones as well as whale vertebral epiphysis (bony disk between vertebrae detached in juveniles and fused in adults) from Site 439



**FIG 136:** Unidentified bivalve that tumbled down from the Choptank fm (Site 439)

It was so cold heading back into the wind that I pulled down my ski mask and wore my backpack on the front of my chest in a feeble attempt to block the wind. Nobody argued about dropping into the museum a little earlier than planned. Stiff winds pushed water onshore and prevented much of a low tide and I think the locals considered all these bad collecting conditions, but being a new site for me with finds I've never encountered before, I felt that my efforts were completely justified.

March 1, 2008: St. Clair if You Dare

While weather forecasts the night before suggested possible snowfall of 2-5 inches overnight blanketing our next day's sites, using an online webcam we were able to see just 1 inch of snow on the ground at 5 a.m. the next morning and proceeded as planned north to exposures of fern bearing shales of the Llewellyn fm (309 MYA) near St. Clair, Schuylkill Co., PA. These fern fossils are world renowned for their white and orange impressions displaying artistically in contrast to the black shale.

We arrived around 9 or 10 a.m., hiked in toting a wheelbarrow and various hand tools and packing materials, and ultimately descended into a snow covered valley  $\frac{3}{4}$  mile away. Without Ron's prior experience at the site we would have been in trouble. At a spot of Ron's choosing I cleared a 10 x 20 foot area of the 3 inch snow cover only to find the shale frozen. This limited our ability to extract large slabs of ferns, but within a couple hours we grabbed probably 25 nice smaller slabs, packed them up, and headed back to the truck, another world famous site now under my belt.



**FIGS 137-139:** Ron Hunter descending into the valley at Site 440 and standing in the area where the author shoveled snow to clear the work area to expose fossil fern bearing Llewellyn shale followed by a field shot of our finds





**FIGS 140-148:** Our fern slabs were dominated by *Pecopteris* with a few *Alethopteris* and *Neuropteris* thrown in for good measure (Site 440)







We pressed even farther north to Carbondale, PA to hunt mine spoil piles for more ferns. We found the piles easily but had to poke around for a half hour to find the more productive areas. We had to work fast as it was a 5 hour drive back to D.C., but we were able to grab perhaps 15 nice fern slabs although they didn't have the attractive colors of the St. Clair material. I believe most of our ferns from both sites were *Neuropteris*, *Pecopteris*, and *Lepidodendron*, but we saw some *Calamites* horsetail stalks as well. I believe that *Pecopteris* dominated our take. The find of the day was Ron's 72 LB *Calamites* stump which I ended up lugging 400 yards through the snow

covered woods back to the truck with my own heavily laden pack on my back. He ultimately made good on his threat to make me his "mule".





**FIGS 149-151:** Two views of fern bearing mine spoil piles followed by a big section of *Calamites* sp. (horsetail) in matrix (Site 441)





**FIGS 152-153:** The author's full diameter *Calamites* section followed by Ron Hunter with his colossal *Calamites* stump (Site 441)



**FIGS 154-159:** Nice ferns including *Pecopteris* sp. (compound leaves) and *Lepidodendron* sp. (Straight, grass like leaves) this and next 4 pages (Site 441)









March 2, 2008: Dalliances in the Devonian

We kicked around several options for Sunday, a short day due to my impending flight home, and ultimately settled on revisiting some of Ron's favorite Devonian marine sites in eastern WV and western VA. I had never collected Devonian age exposures and was gung ho to add a few new things to my collection. The first site in the Needmore fm was a roadside shale bluff that has weathered and been collected extensively since Ron's last visit. Still, I was fortunate to pick up a small coiled nautiloid *Agoniatites vanuxemi*, my first coiled cephalopod of this age. Ron was dispirited from the lackluster collecting compared to past visits so we quickly moved on.



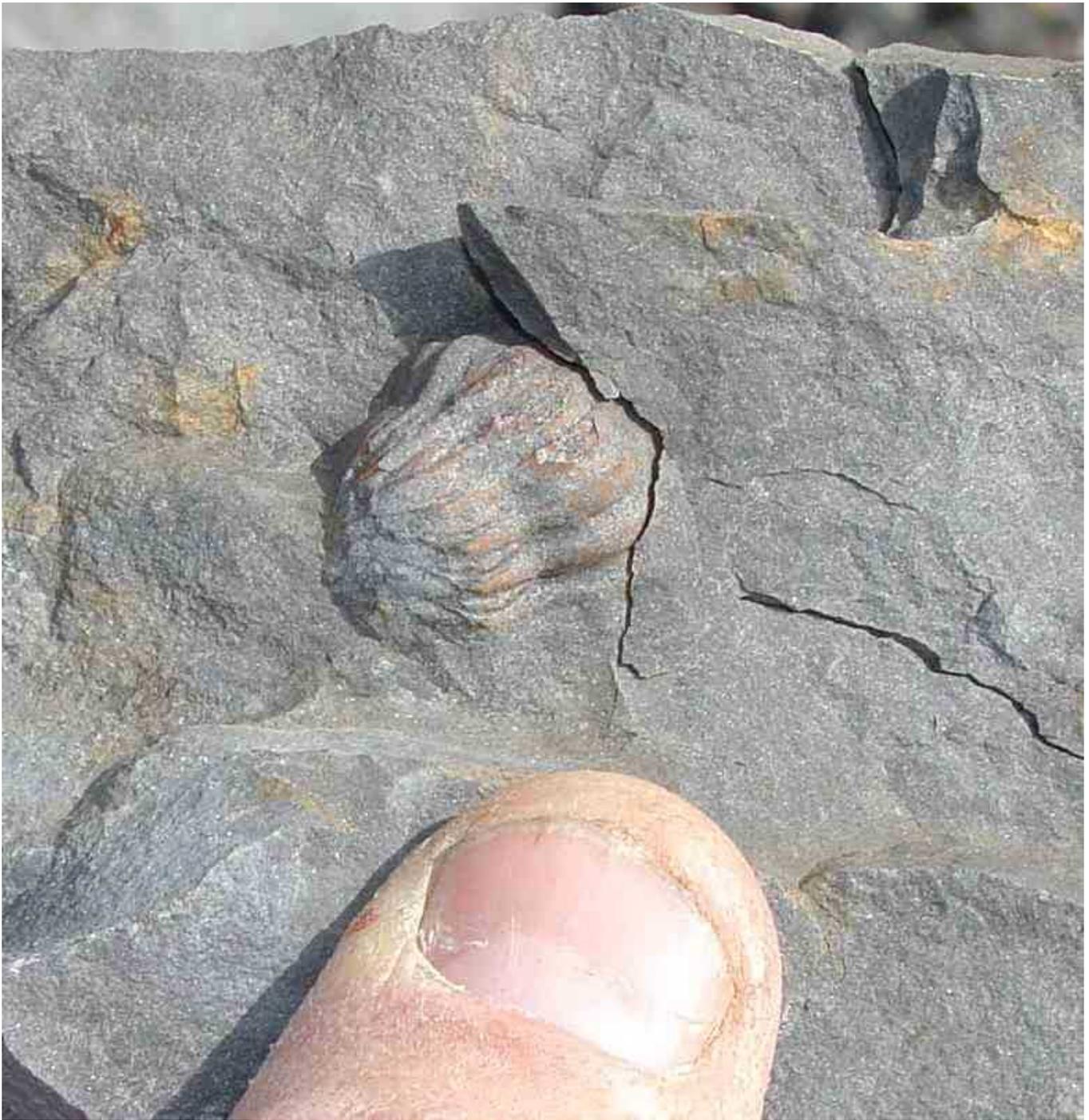
**FIGS 160-162:** Devonian nautiloids *Agoniatites vanuxemi* and headless trilobite *Phacops rana*(?) from Needmore fm Site 442



We almost kept driving upon seeing the second and even smaller exposure. I'm glad we stopped though as I grabbed several more *A. vanuxemi* along with a partial *Phacops rana* trilobite in the unctuous (soapy feeling) tan to olive green shale. The third Needmore site was a dud, but the final site took us out of WV and into VA where we got into a different formation, the Mahantango fm (385-392 MYA). This site was a huge double roadcut exposing lots of gray, purple, red, and tan shale. At first I thought this would be another played out site but our diligent search produced my first decent Devonian trilobite, a picturesque enrolled *Phacops rana* in a piece of purple shale. I also landed a nice *Michelinoceras* straight nautiloid section before we moved farther up the cut and both found nice brachiopods including *Mucrospirifer*, *Devonchonetes*, etc. I even found a partial operculum (skull plate) from an unidentified placoderm (armored bony fish).



**FIG 163:** Road cut exposure of Devonian Mahantango formation (Site 443)





**FIGS 164-165:** 2 views of the author's best Devonian trilobite *Phacops rana* (?) from Site 443



FIGS 166-167: Unidentified bivalve and *Mucrosprifer* sp. brachiopods (Site 443)



FIGS 168-169: Unidentified gastropods, *Mucrosprifer* sp. brachiopod, and orthocone nautiloid *Michelinoceras* sp. above, *Mucrosprifer* sp. brachiopod below (Site 443)



**FIG 170:** Unidentified operculum (skull plate) from a Devonian placoderm (armored fish) from Mahantango Site 443

Content with our finds we started toward the airport for a relaxed lunch with time to spare. We stopped for liquid refreshment when Ron realized his wallet was missing. He figured that his numerous butt slides down the shale slopes in the last road cut had claimed it. We did a u-turn and floored it back to the site. By marching up and down the exposure we were fortunate to locate his wallet within 15 minutes and were back on the road. We both made our respective “finds of the day” at that site.

It had been an insanely productive weekend during which we drove 1300 miles or more to claim 400 LBS of quality fossils. We experienced shed blood, lost and found tools and wallets, drove through 2 whiteouts in PA, suffered through icy winds, made new friends, and of course reinforced our own friendship during this epic odyssey. Special thanks to Ron and his wife Hyunsook for opening their beautiful home to me along with the crunchy floors, clogged sinks, and caustic vapors that tend to accompany my fossil collecting and prep.