

**FOSSIL COLLECTING REPORT**  
**MAY 2006**  
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May 6, 2006: Echinoid Exhumation

I guess my rain dance finally worked. Bands of severe showers brought a short reprieve to months of drought in South Texas. My wife woke me up scared one night last week as nickel-sized hail pelted the house, and between flashes of lightning I could be seen peeking between the blinds, kneading my hands, and laughing in sinister fashion...long needed rain would uncover fossils at some of my favorite local sites, and my plans to survey them were already in the works.

A grim Saturday forecast prompted me to cancel my North TX plans. Many of you know it takes a lot for me to scrap a good trip, but reports of a few tornadoes the next day made me not regret my decision. Plan B was a look at freshly washed exposures in the San Antonio area.

My first stop was a construction site in the Glen Rose formation (108 MYA) where a Home Depot was just built and construction of a retention pond is rapidly underway. I arrived to find black skies approaching with a little lightning in the distance. I looked at the heavy equipment operators, they looked at me, and I hit the exposure, quickly snagging a few *Salenia texana*, *Palhemiaster comanchei*, and *Heteraster obliquatus* echinoids. When the equipment fired up I beat it before getting yelled at. I donned my rain jacket and dropped behind a nearby strip mall where a hillside cut had given up nice Glen Rose echinoids in the past. I took a few more *Salenia texana* in 20 minutes.



**FIGS 1-2:** Glen Rose echinoids *Salenia texana* left, *Heteraster obliquatus* and *Palhemiaster comanchei* right (Sites 24 and 288)

Pressing on to site three (again in the Glen Rose fm) I had to sit in the truck for 20 minutes until driving rain subsided. It was a slip-sliding sloppy crawl with mud packing in between my kneepads and knees, but a couple hours of this drill produced excellent results. In addition to crab claws *Paleopagurus banderensis* and *Callianassa* sp. I got 17 tiny echinoids including one *Orthopsis comalensis*, two *Globator hancockensis*, two *Goniopygus* sp., and the remainder *Salenia phillipsae*.



**FIGS 3-11:** *Glen Rose echinoids Orthopsis comalensis* top left and top center, *Globator hancockensis* top right and entire center row, *Goniopygus* sp. bottom row (Site 161)



**FIGS 12-14:** Glen Rose formation echinoids *Salenia phillipsae* top, crab claws *Paleopagurus banderensis* bottom left, crinoid columnals *Isocrinus (Pentacrinus) annulatus* bottom right (Site 161)

On a whim I passed by the morning's construction site and found that the workers had been sent home due to rain, which by this time had passed. That was just the ticket I needed to complete my look at the exposed *Salenia texana* zone, which could be under concrete before I get a chance to look at it again. I grabbed another handful of echinoids.

An hour later I was found on an old reliable exposure of Pecan Gap fm (73 MYA). An hour of clawing at the crumbling yellowish white chalk produced a cute little *Pecten* bivalve and two ammonites *Pachydiscus travisi* and *Trachyscaphites spiniger porchi*. The Pecan Gap gives up fossils quite sparingly, but condition is often very good once something is found.



**FIG 15:** Ammonites from the Pecan Gap fm including *Pachydiscus travisi* left and *Trachyscaphites spiniger porchi* right (Site 20)

The next site was my local favorite, the construction site I found back in November in the Corsicana fm (68 MYA). Although I took 3 trusted friends there a couple weeks ago, 3 hard rains since then had completely refreshed the place. My knees were pretty shot from earlier in the day, but the finds were good enough for me to endure 2-3 hours of crawling. As a matter of fact when I was walking down the hill to select a starting point I happened to look down and catch sight of a curious white blob glaring back at me contrasted against the deep orange wet matrix...my first *Dakoticancer australis* crab carapace of the day. 5 feet and 5 seconds later I produced its twin washed out in the same gully. I could see the rostrum and orbits (nose and eye sockets, so to speak) on at least one specimen.

This was a great start and it was complemented by a great finish. My efforts produced two more nearly complete carapaces plus a couple halves and an articulated cheliped (front leg with pincher). In addition I picked up nearly 30 echinoids including mostly well-preserved *Hemiaster bexari* specimens exhumed by recent rains. I did get a couple *Proraster dalli* and *Plesiaster americanus* specimens but they were partially crushed. A baggy of nice gastropods and bivalves rounded out this suite of finds from the Corsicana.



**FIGS 16-21:** *Dakoticancer australis* crabs from the Corsicana fm – specimen 1 top 4 frames, specimen 2 bottom 2 frames (Site 248)



**FIGS 22-27:** *Dakoticancer australis* crabs from the Corsicana fm – specimen 3 top 4 frames, partial specimen 4 bottom 2 frames (Site 248)



**FIGS 28-32:** From the Corsicana fm - *Dakoticancer australis* specimen 5 top 4 frames, *Hemiaster bexari* echinoids below (Site 248)



**FIGS 33-36:** From the Corsicana fm – *Hemiaster bexari* echinoid with attached bivalve *Neithea bexarensis* top left, echinoid *Plesiaster americanus* top right, partial ammonite bottom left, nautiloid *Eutrophoceras* sp. bottom right (Site 248)



**FIGS 27-41:** More from the Corsicana fm – bivalves *Trigonia castrovillensis* above, bivalves *Neithea bexarensis* and unidentified molds middle left, unidentified bryozoan middle right, unidentified horn coral below (Site 248)

My final site of the day was not terribly productive. It was a graded lot, now mostly overgrown and back filled, which I found a couple years ago in a formation I can't quite peg just yet. I believe it is Upper Taylor Clay, known in the Austin area as the Bergstrom fm, about 72 MYA. Stratigraphically it sits between the Pecan Gap and Corsicana in Bexar County and differs lithologically and faunally from both, and its limited aerial extent has kept me from studying it closely. In short 15 minutes of looking produced one *Plesiaster*-like echinoid found by randomly clawing up the bedded matrix and a handful of *Baculites* fragments.

The day was a smashing success. I was able to survey 6 sites in 4 formations, walking away with keeper material from each, in some cases by the Ziploc load. I laid hands on nearly 100 echinoids, although perhaps 1/3 to 1/2 will end up on the kiddy give away pile after initial garage inspection. Still, many nice echinoids were ripened by all the rain, and I was there with my proverbial sickle in hand ready for the bountiful harvest.

#### Mid Week Bonus Collecting

When heavy rains interrupt the normal South Texas drought I quickly prioritize my collecting sites for upcoming visits. Certain sites are best looked at wet, while others need a little drying out time prior to scrutiny. After work last week I hit 3 sites of the latter type variety.

Wednesday brought me to a small Eagle Ford exposure (90 MYA) just a couple miles from the house. I had a nice but small *Cretolamna* tooth in matrix within the first few minutes, then spotted an ammonite keel jutting out of the hill where a dozer had just scraped the exposure. Careful air scribing relieved the specimen of the weak, chalky surrounding matrix to reveal a finely ribbed, ventrally noded ammonite possibly in the *Acanthoceras* spectrum. If I can put photos in front of an ammonite expert I may finally know what members of the Eagle Ford group are represented in Bexar County where outcropping members are mapped undivided.



**FIGS 42-45:** From undivided Eagle Ford exposure in Bexar Co. – unidentified ammonite above, shark tooth *Cretolamna* sp. below (Site 78)

Thursday took me to the same hill as Wednesday, only this time I was on the opposite side near the base where I was a couple formations lower in section. The Del Rio clay (98 MYA) caught my eye from a mile away as an eroding pit can be seen from the highway far back in a field. At any rate oysters were present literally by the tens of thousands or more, as is typical in the Del Rio. Most were singles, but there were also cemented slabs of *Ilymatogyra arietina* "ram's horn" oysters present in great numbers.



**FIGS 46-47:** Fossils from the Del Rio fm including echinoid *Heteraster* sp. and crab burrow left, fused oysters *Gryphea mucronata* right (Site 293)

Oysters in general don't interest me from an aesthetic standpoint, however they are wonderful zonation indicators which can at times point you toward better fossils and tell you approximately where in section a given formation is exposed. In this case the abundant *I. arietina* denoted the bottom 2/3 of the 60 foot section of the Del Rio present in Bexar County, while uphill the disappearance of this oyster and the appearance of a very different looking oyster *Gryphea mucronata* designated the upper 1/3 of the formation. I concluded that I was looking at approximately the middle 2/3 of the formation at this site. There were scattered *Neithea* scallops as well, and I got lucky at one point and found a small *Heteraster* echinoid in the *I. arietina* zone. I plan to take Weston back to this site and let him load a bucket with oysters while I crawl the area for other things such as the coveted regular echinoid *Cottaldia* and the ammonite *Budaiceras*.

Friday brought one more collecting opportunity before the weekend, this time at a once prolific echinoid and ammonite site I found a couple years ago at the Georgetown/Del Rio contact (99 MYA), an overlooked ditch right next to the highway. Here the soft and fast eroding brown Del Rio clay, studded with *I. arietina* oysters, is in direct contact with the beige and pyrite-rich nodular limestone below which is the Mainstreet member of the Georgetown formation.

Large *Neithea* scallops dotted the fossilscape, and a few giveaway grade *Plesioturrilites* made it into my bucket as well. My prize find was a very nice 4 inch *Paracymatoceras* nautiloid recently exposed in the clay. A half hour of searching turned up a single large but imperfect *Coenholectypus* echinoid at the base of a dried up ephemeral waterfall, again very near the contact layer. In addition I picked up a compressed echinoid which turned out to be *Hemiaster calvini*, abundant in the Grayson formation of North Texas but scarce down here in the Del Rio equivalent.



**FIGS 48-50:** From the Del Rio/Georgetown contact – *Cymatoceras* sp. nautiloid top left, *Coenholectypus* sp. echinoid top right, *Hemiaster calvini* echinoid below (Site 151)

I was quite pleased with these paleo hors d'oeuvres and my appetite was piqued for the weekend's festivities.

May 20, 2006: Lake Texoma – An Echinoid Necropolis

When I arrived at 5:30 a.m. to pick up friend and fellow collector Frank Holterhoff in Lewisville I was a bit discouraged by the strong south winds and how they could limit our options on the water at Lake Texoma. Fortunately we had selected sites which were somewhat protected along the south shore of the lake. Still, I was somewhat jumpy about putting 2 full grown guys and all our gear in my little 12 foot jon boat, exceeding the load limit by 75 pounds or so.

The adventure began at the boat ramp. I had barely finished my sentence explaining to Frank the instability of small boats when a wake came by as he had one foot in the boat and one on the ramp. Soon Frank launched backward and landed in the lake up to about eye level. With a straight face I nonchalantly said, "Well, now that that's behind us..." I never laugh at a guy about to show me good fossil sites. Good thing it was a warm day.

We could only make about 6 mph and I hung close to the shorelines until getting more comfortable with the boat as loaded. We took some spray over the bow and I occasionally employed the bilge pump (milk bottle with the top cut off) but the ride was otherwise comfortable and uneventful.

Our first stop was an exposure of the Grayson formation (98 MYA) which was half or more submerged by the high lake level. I grabbed a chunk of matrix with several *Plesioturrilites* ammonites jutting out just a couple steps from the boat. Echinoids were our quarry and they seemed to be in hiding, so I pressed 30 yards down the shoreline

and locked my eyes on a shiny, smooth object encased in the bedded matrix as waves gently lapped over it. Like a cue ball stuck in the mud I had found my first *Pseudananchys completa* echinoid, a big inflated thing with a prominent apical system positioned on top like a star. Right next to this echinoid was a nice *Heteraster texanus*. It isn't often that minutes into the hunt I make my best find of the day, justifying the long and expensive drive while culminating a several month quest without even breaking a sweat. Frank has found many of these *P. completa* specimens at this site and noted that they usually have some sort of flaw such as partially missing test or solution etched blemish. This one was nearly flawless.

I grabbed another *Heteraster* while Frank yanked a big worm encrusted and compressed *Coenholectypus* echinoid from the eroding marl. This specimen didn't strike his fancy so I quickly adopted it.



**FIGS 51-52:** Frank Holterhoff collecting the Grayson fm above, *Heteraster texanus* and *Pseudananchys completa* echinoids in situ below (Site 294)



**FIGS 53-59:** Echinoids from the Grayson fm – *Pseudananchys completa* above, *Coenholectypus* sp. covered in worm tubes bottom left, 3 *Heteraster texanus* and one *Hemiaster calvini* bottom right (Sites 294 and 295)



**FIGS 60-63:** Grayson ammonites *Plesioturritites brazoensis* top left, nautiloids *Cymatoceras* sp. remaining frames (Sites 294 and 295)

The Atlas of Texas map shows many Washita formations along the water's edge, but a boat ride of several miles revealed only a small Goodland limestone formation in contact with the overlying Kiamichi formation as noted by white limestone below and brown, eroded oyster hash above. These rocks are about 104 MYA. This site had been tapped some time ago as evidenced by the numerous impressions where *Oxytropidoceras* ammonites had been removed. Still I found one worth extracting.

One last Grayson site near our put-in was a vertical bluff requiring us to wade knee deep to hunt the bottom few feet of the face. I parked the boat in the middle and headed one direction while Frank headed the other. In a half hour I was able to claw out a couple nice *Plesioturritites* ammonites plus a couple very nice *Cymatoceras* nautiloids. I motored over to Frank and beached the boat only to find a perfect *Hemiaster calvini* echinoid at my feet followed by another *Heteraster* upon beaching. Frank too had collected a few *H. calvini*, one huge for the species at about 60 mm long.

At this point we headed to the Oklahoma side of the lake and motored to a site in the Caddo formation which is essentially the Oklahoma equivalent of the Duck Creek and overlying Fort Worth fms, about 103 MYA. This particular shoreline slope was becoming overgrown, but we each quickly found a couple *Macraster* echinoids before losing sight of each other for a while. Frank took the higher part of the exposure while I stayed down low. I hit a productive ammonite zone and began shuttling nice *Mortoniceras* specimens back to the boat.

Perhaps I was just a little too gung ho to notice the stick that caught the top of my shoe mid-step, essentially pole vaulting my sprawling mass into the rocky shoreline. My palms and wrists took the whole blow and I just lay there for a few minutes trying to decide if my thumb metacarpals were broken. Bruised but intact, I gathered myself and went about looking for my hammer, which I'd inadvertently flung between some rocks 15 or 20 feet away. Frank had his nose down at echinoid level and missed the show. After I grabbed a few more ammonites and Frank ousted a nice *Hemiaster calvini* (strange because it is not often found in this formation) from its shallow grave we were racing against the sunset to hit our next site.



**FIGS 64-66:** Frank Holterhoff collecting the Caddo fm above, *Macraster* sp. echinoid bottom left and *Mortoniceras* sp. ammonite bottom right (Site 296)



**FIGS 67-68:** From the Caddo fm – two ammonites *Mortonicerias* sp. (Site 296)

Back in Texas I took Frank to a little creek site providing easy but wet access to the Duck Creek formation just 50 yards from the truck. Recent floods had served us well as ammonite keels could be seen jutting out of the exposure from far away. I first showed Frank a layer where I had collected several well preserved, but small *Macraster* echinoids in the past, then I proceeded to claim a few ammonites. I grabbed nice one sided *Mortonicerias* from the soft marl before Frank called me over to work on a 12 inch *Eopachydiscus marcianus* jutting out just above the echinoid layer.

With daylight waning I then joined Frank in mining for *Macrasters*. Frank pocketed 26 or 28 specimens while I dug out about 10 or 12 loose ones and a chunk of soft matrix with a few jutting out of it. Later at home I began air scribing and chemically etching this piece to reveal 25 *Macraster* specimens plus a bonus *Goniophorus scotti* captured together in their final resting place. Closer scrutiny of one of the loose specimens revealed that it had many hair-like spines still attached to its underside.



**FIGS 69-70:** Fabulous Duck Creek echinoid cluster including 25 *Macraster* sp. specimens and one *Goniophorus scotti* (Site 73)



**FIGS 71-76:** More echinoids from the Duck Creek fm – “geodized” *Macraster* top left, detail of *Goniophorus scotti* top right (both from preceding cluster), remaining specimens *Macraster* sp. from the same association as the cluster (Site 73)



**FIGS 77-78:** Duck Creek ammonites *Mortonicerias* sp. left and *Eopachydiscus marcianus* right (Site 73)

It was a long ride home, but good finds tend to keep me awake for the duration. The bed felt good when I fell in at 4:18 a.m., that is until my four year old began beating a pot and spoon over my head around 9. ay have to dig deeper into my goodie bag to make this happen soon!