



JANUS

The Newsletter
of the
North Carolina
Fossil Club
www.ncfossilclub.org

2007 Number 2

Summer Calendar

July

- 15 NCFC Meeting:** NC Museum of Natural Sciences, 1:30 PM. Dr. Nick Fraser, Virginia Museum of Natural History, will speak on the Triassic of China. Business meeting follows.

September

- 16 NCFC Meeting:** NC Museum of Natural Sciences, 1:30 PM. Speaker TBA. Business meeting will follow.

First announcement: 2008 NCFC trip to the Green River Formation in Wyoming, Utah, and Colorado.

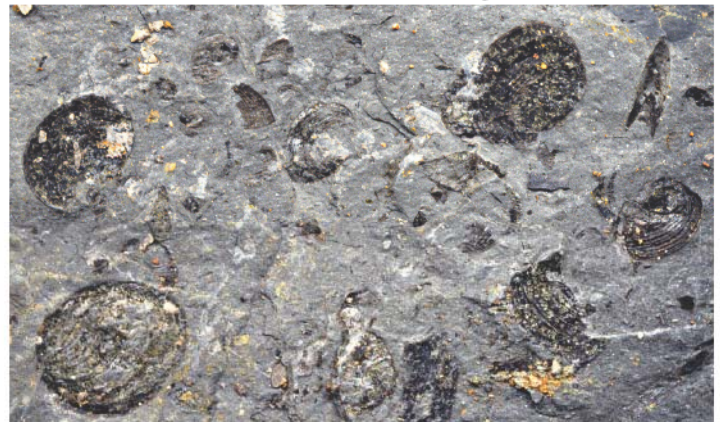
James Bain plans to lead a collecting trip to the Eocene Green River Formation in WY, UT, and CO from June 8th to 15th, 2008. Partial itineraries are available for those not able to spend the whole week. Children are welcome. Participants will arrive in Salt Lake City on Sunday, June 8th, and drive to Kemmerer, WY, that evening. Monday and Tuesday will be spent at pay-to-dig quarries in the Kemmerer region, focusing on fish. On Wednesday, we will move to Vernal, UT, from where we will explore plant and insect sites on public lands in Uintah County, UT, and Rio Blanco and Garfield Counties, CO. We will return to NC on Sunday, June 15th. If you wish to spend the following week touring Mesozoic sites of the "Dinosaur Triangle" on your own, JB will provide a self-guided itinerary. For more information, write to JB at james.bain@duke.edu.

President's Column

Our spring field season was active, with lots of paleontological fun in the Tarheel State. All 50 of our members who were scheduled to hunt at PCS-Aurora on March 25th showed up and hunted. As one of the guides at PCS this year, I can attest to the fact that few clubs are so responsible--sometimes less than half of the expected hunters show up. I want to acknowledge Dave Sanderson's leadership in making the PCS trip such a success. Let me mention one other outing that drew a crowd. Despite predictions of rain, 33 NCFC members showed up at the Cemex quarry on the Virginia border east of Eden, NC, to hunt for Triassic fossils on April 14th. Jim Mahoney labored for months to arrange this trip, and we owe him a big tip of the old hardhat. Previously, this quarry had been owned by Virginia Solite and Giant Cement. The new owner, the multinational Cemex S.A.B. de C.V., is based in México, and is said to now be the world's largest cement company. [In May, while visiting Puerto Peñasco, Sonora, México, I was impressed by the ubiquitous Cemex trucks in a beach area under development--they had even erected a temporary cement factory in the desert near the beach.] Cemex's plans for the Eden quarry are not yet clear, and we were grateful for the opportunity to collect. This quarry exposes the Upper Triassic Cow Branch Formation, deposited in the Dan River rift basin, in one of the rift lakes that formed during the breakup of Pangaea (Carnian, roughly 220 million years old). Dr. Nick Fraser, Curator of Vertebrate Paleontology, Virginia Museum of Natural History, gave up his Saturday and drove down from Martinsville to be our guide. Dr. Fraser began with a brief lecture on the depositional environment and then described the flora and fauna of the ancient lake and its surroundings,

complete with specimens to pass around. Fossils of fish, plants, reptiles, insects, and other organisms are known from this site. We learned that this is one of the world's premier localities for Triassic insects, and that some insect zones are only millimeters thick. Dr. Fraser's talk was information-rich, but at the same time witty and accessible to us laymen. To express our gratitude, we presented him with a complete set of our Club's publications. It is our tremendous good fortune to have him as the speaker at our upcoming meeting in Raleigh on July 15th. After his talk, he got us started splitting shale. Most of us, myself included, found only stems and tiny leaf fragments of Pagiophyllum and similar plants and scales of conifer cones. Such fossils typically occurred as thin carbon films, many of which are colorfully pyritized. To me, slowly splitting the fissile shale one thin plate at a time and then peering at the freshly exposed surfaces is relaxing and absorbing and reminds me of good times spent fossicking Out West. Several Club members let their enthusiasm get the better of them, and they excavated a thin, vertebrate-fossil-bearing stratum with more speed than finesse, at times spalling rocks uncomfortably close to those working below, and perhaps missing specimens in their haste. I encourage them to slow down and take time to examine the material they excavate. Two individuals who exercised care in excavation, Rufus Johnson and Al Klatt, were rewarded with partial skeletons of the little long-necked, lizard-like reptile, *Tanytrachelos ahyinis*, which they were allowed to keep. That critter might have been a swimmer. The bones of Al's "tany" are bright blue. Dr. Fraser and his colleagues have just described a second long-necked reptile from this quarry, a new genus and species, *Mecistotrachelos apeoros* (*Journal of Vertebrate Paleontology* 27: 261-265, June 2007). This creature appears to have been a tree dweller capable of gliding. After five hours in the quarry we dispersed. Several of us visited a second site in the city of Eden, where crumbling Cow Branch Formation shales yielded abundant bivalve mollusks, coprolites, and fish scales. Summer heat and humidity are upon us now. I have a pile of mixed PCS fossils on my kitchen table. So here I sit in air-conditioned comfort, picking out "contortus" teeth for a new exhibit at the Aurora Fossil Museum, and looking forward to the autumn collecting season.

James Bain



Pelecypod fossils: Triassic Cow Branch Formation, Eden, NC.



Back in Print

The Collector's Guide to Fossil Sharks and Rays from the Cretaceous of Texas by Welton and Farish is available online from <http://www.texassharks.org/>. This is an outstanding book with some applications to North Carolina. One seller on Amazon.com recently had a copy of the original for sale at \$385.99!!!

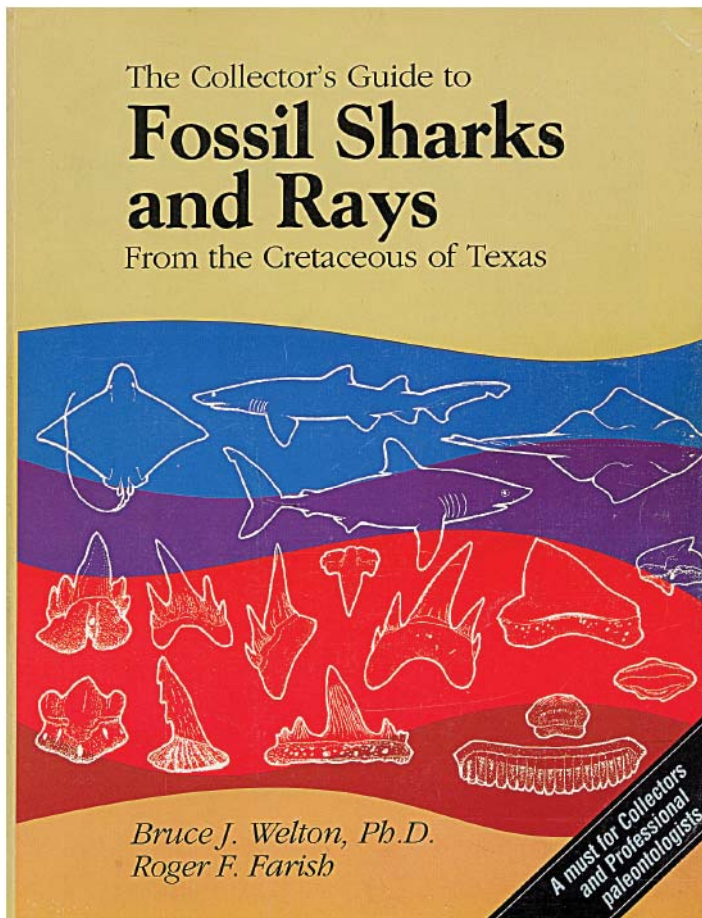
Green's Mill Run

We had great weather for the GMR trip and the stream was clear and slow. I had worked a section about 30 yards from the 10th street bridge and had only gotten a couple of small teeth and a few belemnites. I decided to go down stream to look for some better gravel beds.

My wife Sue had made the trip with me, but she wasn't feeling well so I didn't want to go too far from our entry point. I found some others working a large gravel bar about 50 yards from where we came in and I asked if they minded if I screened a section between them.

We all settled in and were moving sand and gravel at a good clip. I found the large tooth after about five or ten screens. I enjoyed the trip and was very pleased with my finds. (See above photograph.)

Jay Coe



Publications available on-line

You may not have been able to get a copy of "Lee Creek III" when it was published a couple of years ago. Free copies of it (and most other *Smithsonian Contributions to Paleobiology*) can be downloaded here. Be warned: the .pdf file of the high resolution version of "Lee Creek III" is a staggering 218 MB!

<http://www.sil.si.edu/smithsoniancontributions/Paleobiology/>

Publications from the American Museum, including the respected *Novitates* series can be downloaded free from:

<http://digitallibrary.amnh.org/dspace/>

Some publications of the U.S. Geological Survey (including some of C. Wyeth Cooke's volumes on echinoids) can be downloaded. Unfortunately, not all are available and those that are require installing a special (free) Lizardtech reader.

<http://infotrek.er.usgs.gov/pubs/>

Finally, many old scientific books in the Public Domain can be perused (free) online from Google Books:

<http://books.google.com/>

Trip to PCS

About 50 members attended the Club's trip to PCS on March 25. Whale teeth seemed to be the order of the day with Anne Lineberry bringing home the prize: two 5½" sperm whale teeth with a portion of bone in matrix together with three other nearby teeth. George Oliver and Brent McGuirt each found *Squalodon* premolars while Ron Edwards had a huge (8") reworked sperm whale tooth.

Several *megalodon* teeth were found: raking down a Yorktown hill provided Bryan Blanton with a great 3½" lower and a 2½" posterior. Most newer members will not know Val and Jack Gollahon from South Carolina. I have known them for almost 20 years now and am in awe of Jack's ability to find outstanding specimens on every trip we have shared. He didn't let me down this time either with a 4¼" *meg* tooth and a much scarcer (for PCS) horse tooth. Teri Caldwell must have had her nose on the ground to see her *Notorynchus* symphyseal.

On my previous trip to PCS I had spotted many fragments (and even some spines) of the rare and exceedingly fragile echinoid *Echinocardium kelloggi*; Joy Herrington had even found a near-complete, very large specimen. My goal on this trip was to emulate Joy. This was what the psychologists call a defense mechanism: in setting such an unreasonable goal I couldn't be too disappointed when it failed. Again, I did find many fragments and spines but not even any large pieces. Around 10:30 I was slowly walking out to the end of a long ridge and noticed something off-color: an ivory tinted patch against the background of silvery gray Yorktown clay. When I looked closer I noticed a small crack running across and realized it was the root of a *megalodon* tooth. I remember thinking, "Please, please, let it be whole!" It was, all 5½" worth (the light area on the root was what showed):



Richard Chandler

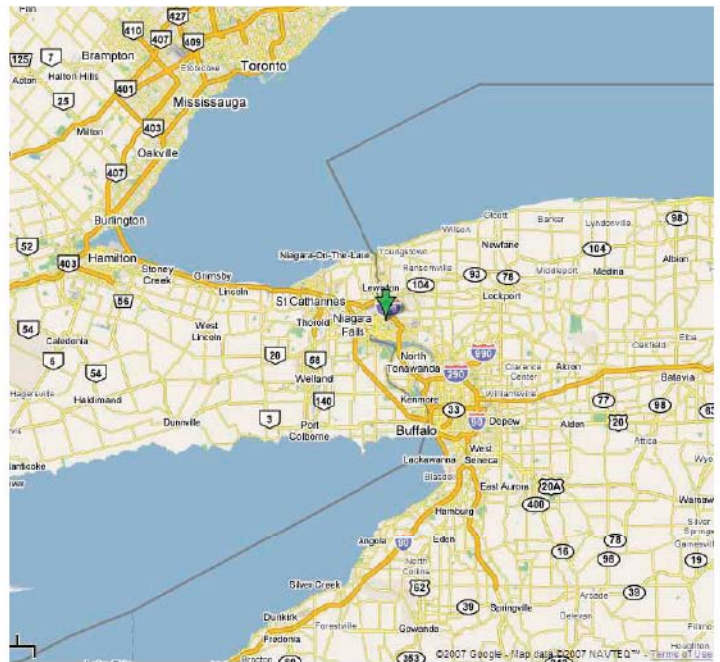
Return to New York Planned

In 2003 we had a very successful trip to western New York State. There have been many requests since then for a return visit, and so we have begun planning another expedition for this fall. The tentative dates are Thursday, October 4, 2007 through Sunday the 7th or perhaps Monday the 8th, flying in and out of the Buffalo airport. As before, we hope to make this a varied experience, with fossil collecting, Niagara Falls, and a meeting of the Buffalo Geological Society thus far on the agenda. We are hoping to return to some of the same sites as in 2003, along with some new locales. Tentative collecting areas will encompass tremendous spans of time, from the Ordovician to Middle Devonian periods.

Please note that, as in 2003, we may pay a visit to the Ridgmont Quarry in Canada to collect eurypterids in the Silurian shales there. While passports are not yet required for individuals traveling by car across the border, I strongly recommend you bring them if you have them, and even consider obtaining a passport for the trip if you don't already have one. My wife and I just returned from a weekend at Niagara Falls. Sandra, who was born in Uruguay and naturalized in the U.S. at age 5, was briefly detained at the border while they confirmed her citizenship. We met another person in the waiting area who was born in France and was naturalized at age 1! They are taking things very seriously these days, so please make sure you have either a passport or other adequate identification. A driver's license may not be enough to prevent significant inconvenience.

Border issues aside, a great time should be had by all. Interested parties should email Jeff Cohn at JCohn@nc.rr.com. Additional details, suggested flights, accommodations, etc. will be provided as planning progresses.

Jeff Cohn



Hot and Cold

David Grabda

We are parking several feet off of Alternate 17 on our way to study intercoastal waterway cliffs to learn about sanddollars and ancient Myrtle Beach history. I grab a small bucket, trowel, and bottle of water. We follow a clearing below power lines to a dirt road. My pants and shoe laces have picked up burrs that we'll need to remove when we get back out least we spread them to our own yard. Part of the fun of walking in is the observation of nature. I see several birds we never see in our own yard. We head down the road to a dirt bike trail that leads to the sandy waterway beach. We scan the sand between tide lines for loose sanddollars. Oh! Oh! I spot keel boat markings up ahead in the sand. Someone may have beat us down here for shells and sanddollars. As I get nearer I notice alternating scuff marks on either side of the keel mark. This is the trail of a large alligator dragging its tail and it's headed for a dry wash, a cut in the bank where rain water gushes out. The dry wash can be a good place to look for shells and sanddollars but we'll skip this one today. A few years back I bent down to get under a low branch to check out a dry wash and came eye to eye with the largest snake I'd ever seen down here. I don't know what kind of snake it was but its midsection was as thick as my thigh. I broke the sound barrier running down the waterway that day! Maybe my ears just popped? Early morning and on cool days a snake will sun itself on top of bushes and low tree branches only to drop on your feet when you get too close. This is good for curing hiccups, or giving you a bad case of the same. We are at the thirty foot cliffs and there is only one more obstacle. A tree has come down and blocks the way with poison ivy going up the trunk and branches in the water. I'd go over the roots but a stand of devils cane with three inch spines blocks that way. I finally spot an open space to crawl thru under the trunk but will probably get wet when the tide comes up on the way back. We find a cliff side clear of sand and debris at the base and no teetering tree on top. We make sure there are no pockets in the cliff with jumbled up Blackwidow spider webbing. Fish are jumping up, appearing to be trying to keep a wary eye on what we are doing. I take the trowel and gently scrape the cliff between the ankle line and knee height until an edge of an *Encope emarginata* sanddollar appears. This is known as the Encope Zone. I gently scrape the cliff between the knee line and waist height until a thinner edge of the sanddollar *Mellita quinquesperforata* appears. This area is known as the Mellita

Zone. From the waist line to chest height is a small elusive sanddollar, probably because of its size, *Echinarachnius parma*. To my knowledge I am the only one that has ever found these sanddollars in the cliff, most are found washed out on the sandy bank.

The cliffs where the sanddollars are found are the Canepatch Formation (Medial or late Pleistocene) about four hundred sixty thousand years old plus or minus one hundred thousand years. They run from the US 501 bridge at Myrtle Beach to the beginning of what is called Restaurant Row, a stretch of about 12 to 14 miles. Due to "progress" large areas of the cliffs are no longer there.

The large, up to six inches, *Encope emarginata* (Leske) has five deep ambulacral notches, which tend to become oval and to close at the outer end, and one long and rather wide posterior lunule (hole). This species lives along the east coast of the Americas from Uruguay to Yucatan to Southern United States. Two nature guide books, Peterson and Audobon, do not list this species to be along the Atlantic nor Gulf Coasts. How hot was it and what terrible storms covered up these sanddollars to kill them in this Global Warming cycle?

Another large, up to six inches, sanddollar *Mellita quinquesperforata* (Leske) is almost circular, flat, with two pairs of narrow lunules and a single large one between the posterior two, five lunules in all. The common name is Keyhole Urchin. This sanddollar can be found on our beaches today and ranges from Massachusetts to Brazil. This Sanddollar is normally already cracked in the banks because of its thinness.

The little sanddollar *Echinarachnius parma* (Lamarck) has a horizontal subtriangular outline with the periproct on the posterior margin. The petals are all open distally (toward outer edge). This specimen was not found in the Cenozoic Coastal Carolina study by Jules R. Dubar, Susan S. Dubar, Lauck W. Ward, and Blake W. Blackwelder (GSA-80) nor mentioned as a fossil in any other report. The common name is Common Sanddollar. It now lives off the coast from Labrador to New Jersey. I can only speculate what interglacial period, maybe Sangamon or Wisconsin allowed this small sanddollar to live along our coast for a short time. What would cause a short cold spell to happen after a lengthy Global Warming period? History shows us it will happen again. The scary thing is that they don't sell snow shovels in Myrtle Beach, South Carolina! Be careful out there. Happy Hunting.

(See back cover for Dave's beautiful drawings.)

Upcoming Fossil Programs This Summer

Can you help?

Jonathan will be presenting programs to the following libraries in Wake County throughout the summer and could greatly use other NC fossil club members to help identify fossils for the kids. All programs will last about an hour and will be a mixture of Jonathan doing a presentation on fossils followed by time to dig in the dirt to find shark's teeth, bones, shells etc. If you are able to help on any of the following dates, please let us know via phone call (919-518-1591) or email (mary.fain@co.wake.nc.us) — that way we know to expect you, give you directions and keep you updated if there are any changes.

Many thanks -- Jonathan and Kathy Fain

Date	Time	Library Name	Address: Telephone
Thur, June 21	4:30 PM	East Regional	946 Steeple Square Ct., Knightdale: 217-5300
Tues, July 03	4:30 PM	Zebulon	1000 Dogwood Dr., Zebulon: 404-3610
Mon, July 09	4:30 PM	Wake Forest	400 East Holding Ave., Wake Forest: 554-8498
Wed, July 18	4:00 PM	Southeast Regional	909 Seventh Ave., Garner: 662-2250
Tues, July 31	2:00 PM	South Gate (South Raleigh)	1601-14 Crosslink Rd., Raleigh: 856-6958
Thurs, Aug 02	3:00 PM	Fuquay-Varina	133 South Fuquay Ave., Fuquay-Varina: 557-2788
Wed, Aug 15	4:00 PM	Cary	310 S. Academy St., Cary: 460-3350

Pennsylvanian and Permian marine invertebrates, Otero and Chaves Counties, south-central New Mexico

James R. Bain, Bahama, NC

Summary: Invertebrate fossils in the Chihuahuan Desert.

Difficulty: From ☒ to ☒☒☒☒ on a scale of five, depending on your ambitions as a rock climber.

Geology: Virgil Bioherm. Bioherms are mounds made by living organisms (Janus 2006, No. 3). This lime-mud bioherm exposed in Dry Canyon, Sacramento Mountains, is in the Holder Formation and is late Pennsylvanian (Virgilian) in age (Dickson 2002). Similar bioherms are located to the west across the Tularosa Valley in Hembriillo Canyon, San Andres Mountains, but they are in an off-limits region of the US Army's White Sands Missile Range. Soreghan and Giles (1999) studied a bioherm complex in Hembriillo Canyon to estimate global sea level change (eustasy) during Gondwanan glaciation events. Algae appear to have been the main mound builders at these bioherms, though corals are present.

Dunken Quarry. My guess is that this inactive quarry exploited the Mid-Permian San Andres Formation. This important stratum of the Permian Basin was the source of much of the petroleum that was extracted in west Texas and southern New Mexico in the 20th Century. Locally, some oil and gas fields are still active. At Dunken Quarry, strata include hard limestones, cherty dolomites, and chalky marls. The enormous Permian Capitan Reef Complex, exposed nearby at Carlsbad Caverns National Park, NM, and Guadalupe Mountains National Park, TX, is younger than the San Andres Formation. Permian brachiopods at Bluewater Lake, northwest NM (Janus 2004, No. 1), are close in age to the deposits exposed at the Dunken Quarry.

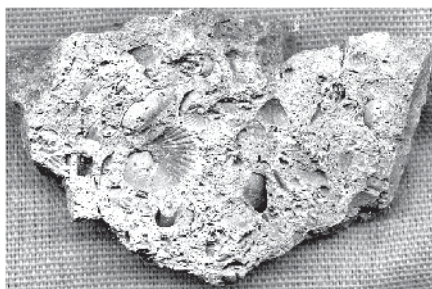
Fossicking for fossils. The Dunken quarry is on state trust land, and the Virgil Bioherm is in the Lincoln National Forest. At both sites, collection of common invertebrate fossils for personal use is allowed. Check with the managing agencies to be certain.



For all of its hydrocarbon riches, the San Andres Formation is only locally rich in macrofossils, and the Dunken Quarry is not an especially productive site for beginners. Persistence is rewarded. Be

prepared to do some hard-rock excavation. Limestones are colorful here, with banding, and some are hard enough to take a polish. Bioturbation is locally pronounced. Macroscopic calcite crystals are common, as are surfaces covered with a handsome druze of tiny calcite crystals. This might be a good place to take your ultraviolet light and root around at night. A few limestone layers are rich in molds of tiny pelecypods and brachiopods. Cephalopods and large bivalves occur here, and I found fragments of both. I also found many small, bright yellow-green scorpions, so be careful out there. Trilobites dwindled during the Permian and got whacked when Permian times ended.

I am from a town where fossiliferous Permian dolomite crops out (Kaibab Formation, Flagstaff, AZ), and I lived there for more than 20 years before someone gave



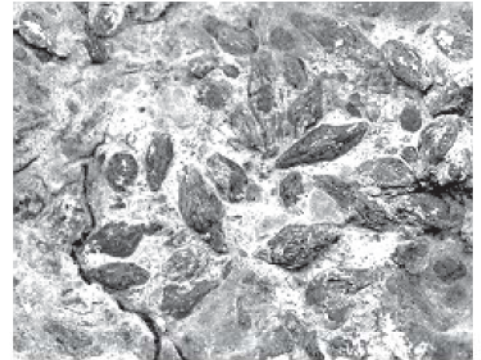
me a local trilobite specimen, and that was just a mold of a tail (pygidium). In April of last year, knowing that trilobite fossils occur at Dunken, I grubbed around some, and found the cast of a tiny pygidium. As my son and nephew used to say when we went fossil hunting when they were small, "the tri-lo-bite is dyn-o-mite!" Someone had just dumped a dead calf near where I found the modest trilobite specimen, and a Gray Fox was moving back and forth at a safe distance, waiting for its supper. I did not mean to disturb the hungry Fox, but I let out a whoop and did the Trilobite Dance, nonetheless.

The Virgil Bioherm is much more productive, plus it offers great views of White Sands in the Tularosa Valley, with the San Andres Mountains beyond. Shales and limestones of the fossiliferous Beeman Formation crop out at road level here. Climb above these to reach the bioherm. About 1.1 mile east of the recommended parking area (below), in the vicinity of milepost 5, fossils of the Holder Formation can be collected



at road level, including "gastropods (40+ species), brachiopods (24 species), bivalves (18 species), scaphopods, nautiloids, ammonoids, fusulinids, sponges, rugose corals, bryozoans, crinoids,

echinoids, trilobites, ostracods, and fish teeth" (Kues 2004: 43). When climbing, take care not to shower rock onto the high-speed traffic below. Up high on the Virgil Bioherm itself, crinoids, stromatolites, and brachiopods are locally abundant. Occasional sponges and corals are found. The platy or phylloid algae that appeared to have built the mound are poorly preserved. Mineralization with white calcite obscures some fossils, but others are mineralized with attractive red jasper. My favorites are the fusulinids, looking much like plump grains of wheat. Fusulinids locally form a dense, coquina-like mass. In some fusulinids, erosion has exposed their inner structures, concentric parallelograms with rounded corners (Janus 2003, No. 3).



Worldwide, altitude profoundly affects vegetation, and this is especially striking in the American Southwest. While making the drive from one collecting site to the other, note that the high country around Cloudcroft (elevation about 8,600 feet) is in moist montane forest, but vegetation of the Chihuahuan Desert

is in evidence at both collecting sites (elevation ~5,000 feet), including the indicator species of this Desert, the Lechuguilla (Agave lechuguilla), along with the Sotol (Dasylirion sp.), several Yuccas, including the Soapstone Yucca (Yucca elata), several Cholla and Prickly Pear cacti (Opuntia spp.), Mesquite (Prosopis sp.), scattered Juniper or "Cedar" (Juniperus), numerous small species of cacti, and the spindly, spiny, bizarre Ocotillo (Fouquieria splendens). Creosote Bush (Larrea tridentata) is fragrant. Not everyone enjoys its scent, but I associate it with springtime in the Chihuahuan and Sonoran deserts, and I like to pinch a leaf or two to release the volatiles. Larrea liberates its smell in the rain. I have been known to bring dry sprigs of it home to North Carolina, where I hang it in the shower.

Although gravel-gathering ants are known from the region, both collecting sites considered here are apparently too rocky for Harvester Ants (Pogonomyrmex), and I was unable to find any fossil-rich ant mounds to rob. Rocky as the soil is, I noticed several diggings of the industrious Badger (*Taxidea taxus*) at the Dunken Quarry.

Navigation. The US Geological Survey 7.5-minute topographic maps to carry in the field are Alamogordo North (Virgil Bioherm) and Meadow Hill (Dunken Quarry). To visit the two sites when driving east to west, begin in Artesia, NM, the major town between Carlsbad and Roswell. Drive about 40 miles west on US Highway 82. At mile marker 69.6, turn left (south) off the pavement onto County Road 11 and pass through the gateway marked "Scharbauer." Signs at the junction call US 82 "Rio Peñasco Road" and County 11 "Helena Road." The land here is a mixture of state trust land and federal public land (Bureau of Land Management), with some private in-holdings. As you turn off the pavement, you can see the Dunken Quarry about 0.9 mile by road to the south, carved into the east wall of the canyon of an unnamed tributary of Rio Peñasco, itself a tributary of the mighty Pecos. County Road 11 descends the wash and takes you within a hundred yards of the quarry (marked as a gravel pit on the USGS map, in the southeast quarter of the southwest quarter of section 4, at an elevation of about 4,840 feet). One spot to park is at 32° 51.42' N, 105° 00.48' W. In researching the site in the rockhounding and geological literature, I noticed that the quarry name is variously given as Duncan or Dunkan or Dunkin--I used the spelling of the nearby settlement of Dunken. To reach the Virgil Bioherm, continue west on US 82 up over the Sacramento Mountains, and descend from Cloudcroft through High Rolls all the way down to Alamogordo on the valley floor. You will pass the bioherm on your right just before Alamogordo on the steep descent down Dry Canyon, but there is no parking in the westbound lane. In Alamogordo, make a U-turn at the junction with US Highway 54-70, head back east uphill on US 82 about 3.7 miles, and park on the right against the guardrail just before the big sign that reads "Lincoln National Forest, US Department of Agriculture" (global positioning system or GPS, 3646370 north, zone 13, 414670 east). The bioherm is above you on the canyon wall. To get under the "bobwire" fence, cross the highway, and walk east uphill a short distance to where a steep gully intersects the fence. Note that a roadcut near milepost 5 is also a productive collecting site (above).

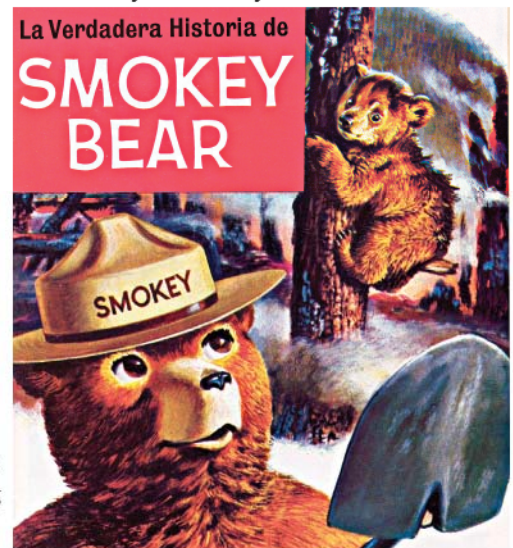
Things to see and do nearby. East of Cloudcroft, the James Canyon Campground is an inexpensive place to camp along the highway. We found no macroscopic fossils in the limestone here, but the dry forest, a mixture of Ponderosa Pine, Alligator Juniper, and Oak, is nice, and resembles forests in the Sierra Madre south of here in Mexico. Porcupine, Striped Skunks, Mule Deer, and Merriam's Turkey inhabit the forests and roadside meadows. Lincoln National Forest's ranger station in Cloudcroft has some impressive invertebrate fossils on display, and they sell regional maps, including topographic quadrangles.

Pop quiz: What does Smokey the Bear have in common with Alexander the Great, Attila the Hun, and William the Conqueror?

They all have the same middle name!

Seriously, though, Smokey Bear came from the Lincoln National Forest, and I have several friends in the Park Service and Forest Service who can get quite testy if you insist on calling him "Smokey the Bear." It is just "Smokey Bear," two words, thank you, and don't you forget it while fossicking in the limestones of south-central New Mexico, where icons of Smokey abound. Smokey's story is a more bit nuanced than I let on. In 1944-45, the Forest Service dreamt up Smokey as an imaginary spokes-bear for their fire-control program. Then, on May 19th, 1950, while fighting a fire in the Lincoln National Forest near Capitan, fire crews found a burned bear cub clinging to a charred tree, and you know the rest of the story. Little Smokey was a hit with the public. After a well-fed life at the National Zoo in Washington, D.C., and his death in November 1976, his remains were repatriated to Capitan, where he rests at Smokey Bear Historical State Park.

While driving around the West as a single parent, with one or several kids in tow, seeking fossils and frogs and other treasures by day and camping every night, we sometimes got really, really bored. My old Ford pickup was not very comfortable, and I guess it must be boring being a kid cooped up in a vehicle in the heat with your parent for hundreds of miles at a time. So we would make up stories and invent new lyrics to old songs. At the ranger station in Cloudcroft, when my son was nine, I was amazed and delighted when the Forest Service staff gave Edward a copy of the comic book, *The True Story of Smokey Bear*. I was born in 1956, and I have memories of getting the exact same comic as a tiny kid. They even had a version in Spanish. The book is totally comball and over-the-top--they have not revised it in all these decades--it is not politically correct--and we loved it. Soon, we were embellishing the story of Smokey Bear's



rise to fame. It turns out he has a loser half-brother, Chompy the Bear, who journeyed from New Mexico to the National Zoo to mooch off of Smokey. Smokey tried to help him get work, but Chompy just sat around the zoo in his underwear, smoking pot, listening to heavy metal, and getting drunk before noon every day. And when the press came around for publicity events, Chompy bit them every time. Eventually, Smokey got fed up and sent Chompy back to New Mexico, where he was recently seen digging in a dumpster behind a Burger King in Las Cruces.

After getting such a good look at White Sands in the Tularosa Valley from the Virgil Bioherm, you owe yourself a trip there. You might know that the brilliant white dunes are not sand at all, but a water-soluble substance called gypsum. In many fossil beds across the West, one can see big translucent plates of gypsum in one of its crystalline forms, selenite. Chemists argue among themselves about the exact number of waters of hydration in this formula, but let's just say that gypsum is calcium sulfate dihydrate or $\text{CaSO}_4 \cdot 2 \text{H}_2\text{O}$. If you bake the water molecules off and grind it, you have anhydrous calcium sulfate or plaster of Paris (CaSO_4). Mix plaster of Paris with the appropriate mass of water, pour it into a mold, and it gives you back the heat it took

to dry it as it sets into a solid mass. Gypsum is of course used in drywall and other familiar consumer products.

This dune field is here in the valley for two reasons. First, rain dissolves gypsum from rocks in the surrounding mountains and drains southwest across the gypsum-enriched floor of Tularosa Valley. Having no outlet to the sea, what does not soak into the ground ends up drying out and crystallizing in ephemeral lakes or hardpans, such as Lake Lucero and the Alkali Flat, relics of Pleistocene Lake Otero. Second, the prevailing wind from the southwest carries the crystalline dust back to the northeast, from whence the molecules had come. The result is an enormous conveyor belt of calcium sulfate, with enough wind-blown gypsum to make this dune field, which covers some 300 square miles. To my nose, the gypsum "sand" has a faintly sweet and fresh smell. This is a special place.



White Sands National Monument is entirely within the boundaries of the White Sands Missile Range, and access to the Monument and even US Highway 70 is subject to closure during aerospace activities, including potential space shuttle landings on Northrup Strip. The ill-fated Columbia landed there once in 1982. Except for a small, hike-in campground, public access is only allowed during daylight hours. At closing time on August 19th, 1997, I had one of my worst moments yet as a parent.

Edward (age 9) and I had put in a hard day looking for Paleozoic fossils in the region described above. He napped as I drove in the desert heat. [After decades in the West, I purchased my first air-conditioned car only after moving to North Carolina in 2002.] After we left the pavement of US 70 and drove eight miles on packed gypsum into the Heart of the Sands, Edward was raring to go play in the dunes, and I was drowsy. He insisted on climbing a big dune by himself. Other families were parked nearby, but it was getting late, and they were beginning to pack. In an enormous lapse of judgment, I oriented my son to the surrounding mountains, discussed sun-compass orientation with him, and then let him scramble up the dune by himself. I sat down to read and relax, and in no time he was gone from my sight. We had traveled thousands of miles around the West since he was tiny, explored all kinds of terrain, often just the two of us in rugged, remote areas, and he had never gotten seriously lost. Until now.

After about a half hour, I climbed the dune, tracking him. But on the other side I lost his tracks in a swarm of kid tracks in a sledding area. The parking area on that side of the dune was empty, and my heart sank. Fighting panic, I resolved to search the immediate area before going for the Rangers. Shadows grew long. The heights of the dunes were all about the same, so there was no high ground from which I could gain an advantage. While running my search pattern, I crested a dune and looked back at my truck. By then, everyone else had left for the day. A lone Park Service enforcement vehicle came speeding up, parked alongside



my Ford, and the loudspeaker came on. "Mr. Bain, come down off that ridge!" Edward had become disoriented and had hitched a ride with a nice retired couple out to the park headquarters on the highway, eight miles away. Ranger Kathleen Denton handed over my kid and gave me the most blistering scolding I have received in my adult life. I deserved it. My face is red just telling the story.

Elsewhere on the White Sands Missile Range, Trinity Site, where the first atomic bomb was detonated in 1945, is open to visitors on two days of the year. Some UFO enthusiasts say that it was this explosion that caused extraterrestrials to begin visiting and watching us. Roswell, NM, has fun with its reputation as the site of an alleged capture of a flying saucer by the US Air Force in July 1947. If you are out collecting fossils in the region and the aliens capture you, please tell them that James sent you.

Literature cited:

Dickson, J.A.D. Fossil echinoderms as monitor of the Mg/Ca ratio of Phanerozoic oceans. *Science* 298: 1222-1224, 2002. [In Figure 2, check out the colorful stained thin section of a crinoid from the Virgil Bioherm at Alamogordo. Calcite and dolomite of the animal's skeleton stain red, while the cement of ferroan calcite stains blue.]

Kues, Barry S. Marine invertebrate assemblages from the Late Pennsylvanian (Virgilian) Holder Formation, Dry Canyon, Sacramento Mountains, south-central New Mexico. *New Mexico Geology* 26: 43-53, 2004.

Soreghan, Gerilyn S., and Katherine A. Giles. Amplitudes of Late Pennsylvanian glacioeustasy. *Geology* 27: 255-258, 1999.

Pictures of Club Events

We all know what an indefatigable photographer Trish Kohler is. Below and on the next page are photos she took at the March 25 trip to PCS and at the Aurora Fossil Festival on May 26.





A Dam??



Charge!!



BIG Fish!



He's not too happy!



Pete Harmatuk and Daughter



Joy & Bob Herrington



NC Museum of Natural Sciences Exhibit



Auction Items

NORTH CAROLINA FOSSIL CLUB, INC.
(Founded 1977)

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2007 MEMBERSHIP APPLICATION - NORTH CAROLINA FOSSIL CLUB

NAME(s) _____
 ADDRESS _____
 CITY, STATE, ZIP _____
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 E-MAIL ADDRESS _____

SELECT ONE TYPE OF MEMBERSHIP	<input type="checkbox"/> INDIVIDUAL (NEW)	\$20.00
(ENCLOSE CHECK OR MONEY ORDER FOR THE INDICATED AMOUNT.)	<input type="checkbox"/> INDIVIDUAL (RENEWAL)	\$15.00
	<input type="checkbox"/> HOUSEHOLD (NEW)	\$25.00
	<input type="checkbox"/> HOUSEHOLD (RENEWAL)	\$20.00

Children of NCFC members who are dependent minors and living at home may accompany parents on any trip *EXCEPT* PCS–Lee Creek or where otherwise noted.

Memberships are effective from January through December of the year (or portion of the year) of the date of application. For example, persons joining in August will need to renew their membership 5 months later in January.

NCFC Liability Statement

The Undersigned hereby acknowledges his/her understanding that fossil collecting is an inherently dangerous activity which can result in serious bodily injury or death, and/or property damage and hereby confirms his/her voluntary assumption of the risk of such injury, death or damage.

The Undersigned, in return for the privilege of attending field trips Related to the collection of and/or study of fossils, or any other event or activity conducted or hosted by the North Carolina Fossil Club (NCFC), hereinafter collectively and individually referred to as "NCFC Events", hereby releases the NCFC, NCFC Board members and officers, NCFC Event leaders or organizers and hosts, landowners and mine or quarry operators from any and all liability claims resulting from injury to or death of the undersigned or his/her minor children or damage to his/her property resulting from any cause whatsoever related to participation in NCFC Events.

The Undersigned agrees to comply with any and all rules and restrictions which may be communicated to the undersigned by the NCFC Event leader and/or landowner and mine or quarry operator and acknowledges that failure to comply will result in immediate expulsion from the premises.

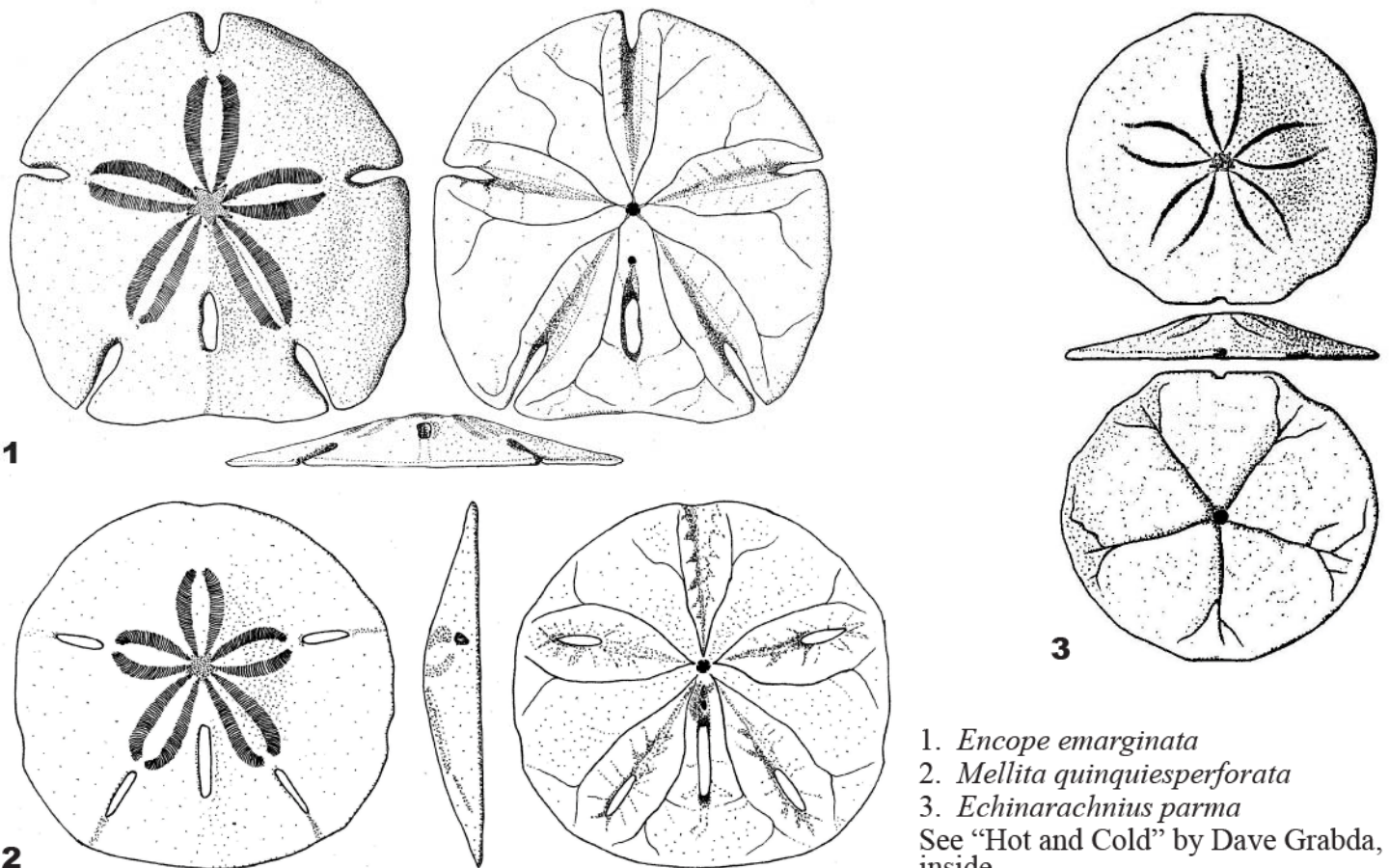
The Undersigned acknowledges that this release covers all NCFC Events and will remain in effect at all times unless or until it is revoked by written notice to the current President of the NCFC and receipt of such revocation is acknowledged.

The Undersigned further attests to his/her intent to be legally bound by affixing his /her signature to this release.

Name _____ Signature _____ Date _____

Name _____ Signature _____ Date _____

MAIL To: NORTH CAROLINA FOSSIL CLUB, P.O. Box 13075, RESEARCH TRIANGLE PARK, NC 27709



1. *Encope emarginata*
2. *Mellita quinquiesperforata*
3. *Echinarachnius parma*
See "Hot and Cold" by Dave Grabda,
inside