The ECPHORA

The Newsletter of the Calvert Marine Museum Fossil Club ***Volume 29 • Number 4 December 2014***

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See the upcoming **Bugeye Times for a story on the Gibson's fossil snaggletooth shark skeleton.* ☼

Hemipristis Teeth through Time

When **Bill Heim** learned of the articulated Miocene snaggletooth shark dentition and vertebrae that we helped collect on Halloween (*), he donated a series of *Hemipristis* teeth from his collection (a few of which are included below), as well as a jaw of a modern snaggletooth shark, *Hemipristis elongatus*. The fossil teeth include three species, *H. curvatus*, *H. serra*, and *H. elongatus*, that range in age from the Eocene through to the present. This donation will enrich an upcoming exhibit on this remarkable find.

Jaws of the extant snaggletooth shark, Hemipristis elongatus.

H. curvatus
Eocene

H. serra
Oligocene

H. serra
Miocene

H. serra
Pliocene

Major Early Donors to CMM's Paleo Collection

Plans are being drawn up to include a touch-screen monitor in our Paleontology Gallery that will include the names of all donors to our Paleontological collection. Here I list the names of a few individuals who contributed substantially to our paleo collection during its early formative years.

Wally Ashby – 433 cataloged items comprising 1365 individual specimens.
Norm Riker – 283 cataloged items comprising 544 individual specimens.

Other notable **early** donors listed alphabetically:
Mike Ellwood – 97 cataloged items comprising 535 individual specimens.
George Fonger – 45 cataloged items comprising 93 individual specimens.
William Holliman – 405 cataloged items comprising 4289 individual specimens.
Jean Hooper – 342 cataloged items comprising 2125 individual specimens.
J. Kaltenbach – 233 cataloged items comprising 1157 individual specimens.
Joe Miller – 470 cataloged items comprising 5202 individual specimens.
Paul Murdoch – 137 cataloged items comprising 219 individual specimens.
Pam Platt – 77 cataloged items comprising 155 individual specimens.

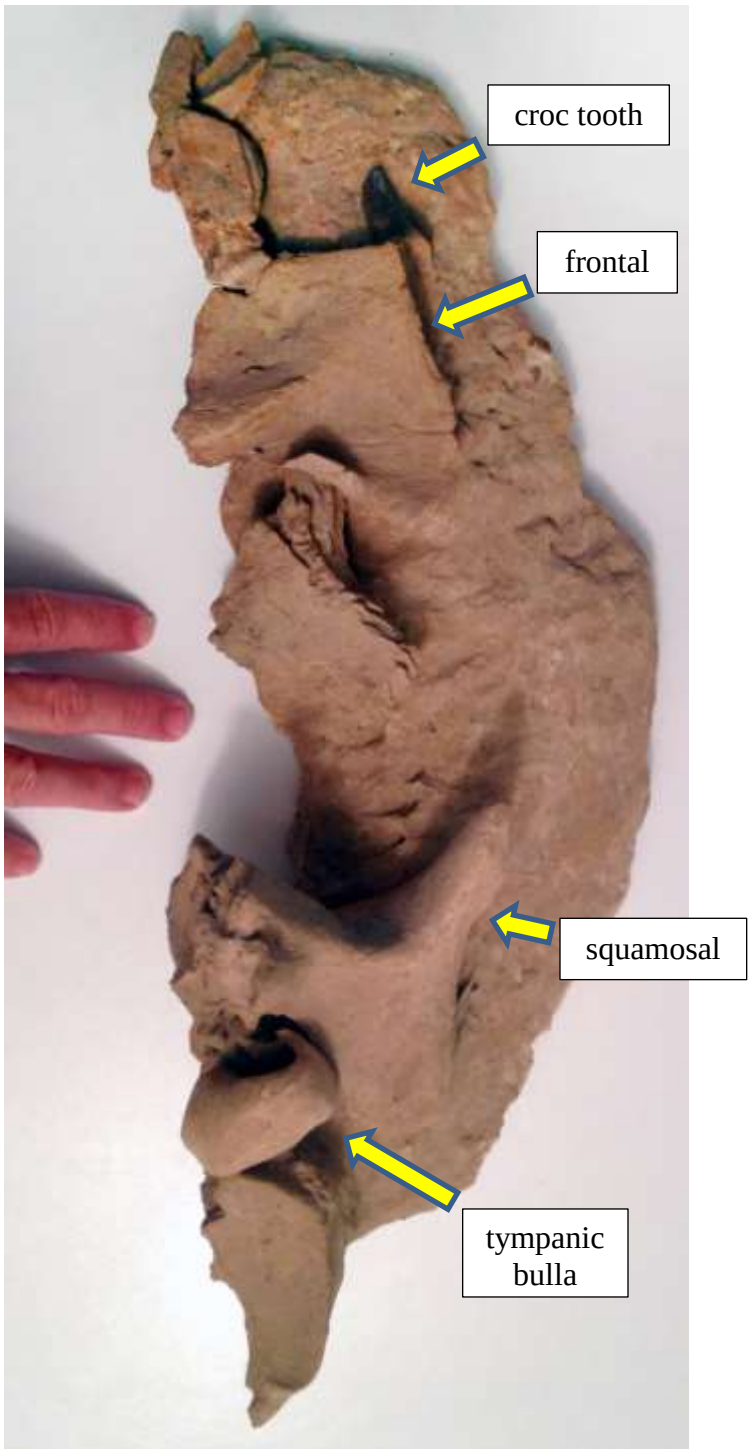
Former Staff
Dave Bohaska – 553 cataloged items comprising 1631 individual specimens.
Bill Counterman – 718 cataloged items comprising 2113 individual specimens.
Ralph Eshelman – 188 cataloged items comprising 932 individual specimens.
☼

Donations continue to be made to our permanent collections including large donations by **Chip Ohlhaver** and the **Silverthorn** Family. Some of these will be featured in upcoming issues of *The Ecphora*.

Megalodon Crushed

These two photos show a lower right anterior Carcharocles megalodon *tooth, found by* ***Paul Murdoch,*** *in which a section of the enameloid exterior of the tooth immediately above the root and adjacent to the serrated cutting edge was crushed into and under (arrow) some of the underlying osteodentine. Photos by S. Godfrey.*

Cetothere Skull from Lower Calvert Formation



Norm Riker *found this partial cetothere baleen whale skull (left side seen here in ventral view, anterior to top of page) along the Potomac River (Maryland) in the lower-most Calvert Formation. Cetotheres are a group of mostly Miocene baleen whales, the fossil remains of a half-dozen different species are found along Calvert Cliffs. For reasons unknown, below Bed 10 of the Calvert Formation, the remains of cetotheres are exceedingly rare along the cliffs.*

An isolated crocodile tooth lying partially buried in sediment adjacent to that part of the frontal bone that formed the eye brow.

An isolated tiger shark tooth next to the left squamosal bone. Photos by S. Godfrey.☼

Spectacled Porpoise in New Zealand

http://www.odt.co.nz/news/dunedin/316414/one-worlds-most-rarely-seen-marine-mammals

Submitted by J. Nance. ☼

Image from:
http://www.cms.int/reports/small_cetaceans/data/P_dioptrica/P%20dioptrica_wurtz.jpg

Echinoderms
Our uncommon Invertebrates

Echinoderms (Phylum Echinodermata) include a number of familiar animals such as starfishes, sea urchins, and sand dollars, as well as less familiar forms such as sea lilies or crinoids, cystoids, and blastoids. Echinoderms are fairly complex organisms with well-developed nervous and digestive systems. The soft body parts are housed in a calcareous exoskeleton (reversed from humans) made up of many individual plates joined together in intricate fashion, the whole covered with a spiny skin. Most echinoderms display a conspicuous five-fold radial symmetry. The phylum contains two broad groupings - Pelmatozoa (stalked forms fixed to the sea floor), and Eleutherozoa (free-moving bottom dwellers).

Among the pelmatazoans are the crinoids, cystoids, and blastoids. Crinoids are most common in Paleozoic rocks. In Maryland, stem pieces and columns can readily be collected from most of the Silurian, Devonian, and Mississippian marine units. Relatively complete crinoids have been found in Maryland in the Ridgeley Sandstone and in the shales of the Hamilton Group. Cystoids were most abundant during the Ordovician and Silurian periods, and have been found in Maryland in the Keyser Limestone of western Allegany County. Blastoids may possibly be found in the Greenbrier Limestone of Garrett County, although none have thus far been reported.

The Eleutherozoa includes two groups of interest to collectors in Calvert County - the stelleriods and the echinoids. The most important stelleroids are the starfishes, which include the brittle stars. Brittle stars are rare as fossils because their skeletons tend to fall apart after death, and the parts scatter over the ocean floor.

Collectors will occasionally find brittle star fossils in the St. Marys Formation, either preserved inside the valves of large bivalve shells or preserved in limonite concretions. Either way, they are rare.

Figure 1. Brittle star imprints from the St Marys Formation along Calvert Cliffs.

Figure 2. Starfish fossils from the St Marys Formation along Calvert Cliffs. Currently on display at the Calvert Marine Museum.

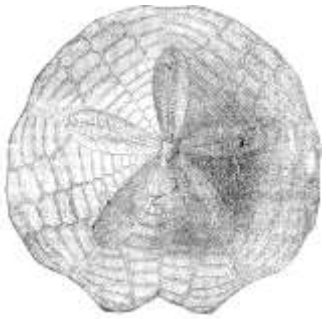


Figure 3. Echinoid test showing plates.

Echinoids include the sea urchins and sand dollars. An echinoid skeleton or *test* is constructed of numerous nearly-flat calcite plates arranged in radial rows.

Figure 4. Fossil and modern echinoids.

The skeleton is covered with skin that is commonly studded with many movable spines of varying size (Fig. 4). The spines serve a dual purpose; they enable the echinoid to move freely over the sea bottom and provide protection.

In Maryland, fossil echinoids are rarely collected complete. The most common form appears to be a Miocene sand dollar, *Abertella aberti* (Fig. 7), found primarily in the Choptank Formation.

*Figure 5. Fossil urchins (*Echinocardium marylandiense*) on a sand dollar (*Abertella aberti*).*

Figure 6. Urchin in dorsal and ventral views respectively.

Figure 7. Choptank sand dollar, Abertella aberti.

Also found in the Choptank Formation, is the Heart Urchin, *Echinocardium marylandiense* (Figs. 5 and 8), which like most urchins was a colonial animal. One of these colonies tends to weather out about every 20 years, giving collectors a short period of time to find them, since the surf tends to dismantle them quickly.

Collectors should keep a sharp eye out for these unusual invertebrate fossils; their rarity makes them important components of any Maryland Miocene collection.

Figure 8. Calvert County urchins, Echinocardium marylandiense.

Figure 9. Burrows, possibly from Echinocardium.

Text and photos submitted by M. Ellwood. ☼

Changes to the Endangered Species Act

http://www.nytimes.com/2014/08/21/opinion/conservation-or-curation.html?_r=0

Submitted by D. Moyer. ☼

Hematite Sandstone along Calvert Cliffs

Here, the red hematite constitutes the cementing agent holding the sandstone together. Hematite is the mineral form of iron (III) oxide (Fe_2O_3), one of several iron oxides.

Copiapite along Calvert Cliffs

John Nance *spotted this lovely example of the yellowish mineral copiapite, encrusting a fallen block of matrix along Calvert Cliffs. Copiapite is a hydrated iron sulfate mineral:* $Fe^{2+}Fe^{3+}_4(SO_4)_6(OH)_2{\cdot}20(H_2O)$*. It forms as a result of the weathering or oxidation of iron sulfide minerals and is therefore referred to as a secondary mineral. Hand by J. Nance. Photos by S. Godfrey.*

http://en.wikipedia.org/wiki/Copiapite ☼

Eocene Whale Shark Tooth
Palaeorhincodon daouii

Whale shark tooth (2mm length). Palaeorhincodon daouii *Noubhani & Cappetta 1997, from the Eocene, Nanjemoy Formation, of Virginia.*

Extant whale shark. Image from: http://images.nationalgeographic.com/wpf/media-content/photos/000/759/cache/75993_990x742-cb1391027859.jpg

Reference:

Noubhani & Cappetta. 1997. The Orectolobiformes, Carcharhiniformes and Myliobatiformes (Elasmobranchii, Neoselachii) from the phosphate basins of Morocco (Maastrichtian-Lower Lutetian). Systematics, biostratigraphy, evolution and faunal dynamics.] Palaeo Ichthyologica, 8:1-327. [Zoological Record Volume 135]

Photos submitted by M. Gulotta Sr. ☼

Reflections on a Mammoth Dig

This is the story of a new mammoth find in North Central Texas. The story begins back in May, 2014 when the owner of a gravel and sand pit in Ellis County (45 miles south of Dallas) while working with his backhoe, came across a big bone. He stopped his machine, came down to take a look and, with his keen eye, saw a big bone coming out of the sandy soil. The dig started soon after that and I was part of the team excavating the mammoth. The mammoth was given the name Ellie May because it was found in Ellis County and May because it was found in late May.

The owner had damaged part of the skull of the mammoth with his machinery. Otherwise, the find has proven to be a magnificent specimen of a mammoth. The skeleton was about 80 percent complete and almost all was found in anatomical position. The size of the tusks and the shape of the pelvis suggest that the mammoth was young (subadult) and that it was a female. The lamellar frequency of the teeth exposed points to a Columbian mammoth, *Mammuthus columbi*. The linage of the mammoths in North America is *Mammuthus meridionalis* (the ancestral mammoth) --- *M. imperator* --- *M. columbi*. The woolly mammoth, *M. primigenius* was not present this far south (i.e., Texas) and it was an immediate descendant of the steppe mammoth *M. trogontherii* in Eurasia. In the Americas there was another species of mammoth, *M. exilis*, the pygmy mammoth descended from the mainland Columbian mammoth and lived on the Channel Islands of Southern California.

But, going back to our mammoth the skeleton shows no sign of scavengers and Ellie May was found lying on her left side practically articulated. What happened to her? Nobody seems to know as yet. The age of sediments is old; they go back to the late Pleistocene (last Ice Age or Wisconsinan glaciation). It corresponds to the Rancholabrean (North American Land Mammal Age). The mammoth remains are located within the Trinity River Basin and are sands and gravels deposited by the ancestral Trinity River and its tributaries. It has not been the only mammoth remains in Ellis County. There have been at least 2 others, but they have been only isolated bones.

The stratigraphic column at the mammoth locality shows from top to bottom: Top soil, several strata of paleosols, interfingered very coarse gravels, and fine sand deposits. Ellie May came to rest at a depth of around 3 meters in this fine sand (composed of fine grains rounded and well sorted). These deposits lay unconformably on the blue-gray shales of the Upper Eagle Ford Group and/or even younger deposits. It is not uncommon to find an Upper Cretaceous faunal assemblage in the gravels: vertebrae and shark teeth of *Cretodus* sp., *Cretolamna appendiculata*, *Cretoxyrhina mantelli*, *Ptychodus whipplei P. anomymus, P. mammillaris*, and fragments as well as complete inoceramid pelecypods.

The sediments where the mammoth bones are encased will be dated by geochronologic methods (Optically Stimulated Luminescence). In addition, radiocarbon dating will be run on the collagen of the bones, to further confirm the age of the mammoth remains.

Most important for the paleoecology of our mammoth Ellie is that she wasn't alone, tooth fragments of another proboscidean (a gomphothere mastodon) in addition to an incomplete tusk of another mammoth have been found in the same locality. This last one appears to be much older than Ellie since it was not found at the same stratigraphic level. It was found at least 3 m deeper than the stratum where Ellis was lying.

All of this makes one's imagination fly trying to picture how was the landscape in what is now North Central Texas in the late Pleistocene: a herd of Mammoths roaming, grazing near lake shores and not far away some nearby forest where gomphothere mastodons were browsing peacefully under a clear blue sky.

The mammoth remains will be studied for a long time; new hypothesis will come to life as of the life and death of our Ellie the mammoth. But one thing is for sure, all of us lucky enough to have participated in the dig will cherish her forever. It is said that you live as long as people remember you … well Ellie will live long if only in our minds. The fossil remains will be taken to a museum and I have already heard of top notch specialists in mammoth research, ready to fully study her scientifically. So, long live Ellie the Mammoth!

I am planning to do my part by presenting the research of myself and my coauthors on the mammoth in Ellis County at a congress that will take place in 2016 in Vienna, Austria.

Text and photos submitted by Virginia Friedman. ☼

Ecphora, its Scientific History

http://www.museumoftheearth.org/about.php?page=who_we_are/ecphora_history

Submitted by J. Nance. ☼

The Ecphora

Almost 30 years of fossil goodness!

http://calvertmarinemuseum.com/204/The-Ecphora-Newsletter

Several years ago during his tenure as President of the CMMFC, **Bruce Hargreaves** spent several months converting pre-digital paper issues of our newsletter, *The Ecphora*, into pdf files. He located old issues scanning each one, and then saved them as searchable pdf files. With the recent launch of the Museum's new web site, now at long last they are posted online!

Submitted by J. Nance. ☼

Fossils from Calvert Cliffs on Display in Panama

*Several months ago, **John Nance** sent a box of typical Miocene fossils from Calvert Cliffs to **Carlos Iglesias**, a paleontologist in Panama. I recently received this photo of part of an exhibit that he assembled that included some of those fossils. Some of his email reads as follows:"…donation of Calvert Marine Museum to our first fossil colecciónn in the university, and a stimulus for the creation of our paleoclub in Chiriqui, Panama. Thank you so, much."*

Photo submitted by C. Iglesias. ☼

Mystery Sandstone Spheres *The Ecphora* June 2014

***Doug Stover** found these clusters of sandstone spheres along the Potomac River, VA. Infilled Miocene-age burrows seem an unlikely explanation. Each one is only about ½" in diameter and some of them are tightly pressed (fused) together. Comments/suggestions welcome. Photos submitted by J. Cuffley.*

Feedback…on the Sandstone Spheres

In reading your latest issue, I saw your entry concerning the sandstone spheres gathered along the Potomac and was struck by how similar they were to ones I had gathered out in the southwest the sandstone slick rock near Lake Powell. We always referred to them as Moqui Marbles even though they lacked the traditional iron coating. They are pretty common out in the land of slick rock, both clumped together as pictured in your newsletter and as individual spheres.

Submitted by S. Sinor.

It occurred to me that I have seen similar structures in the late Pennsylvanian deposits west of Fort Worth, Texas. I have several in my collection. They look very similar, although they are not found in clusters like those of your picture, but they are found in chains and singles.

They are sponges of the genus *Girtyocoelia* sp. I know that in the picture, the caption states that they are sandstone burrows and the sponges I am referring to are calcareous, but the similarity is remarkable.

Submitted by V. Friedman. ☼

Partial Seal Skull found along Calvert Cliffs

Debbie Young *found this partial skull of a Miocene seal that preserves the skull cap (the paired frontal and parietal bones, i.e., the area surrounding the top and sides of the brain). The curved prongs protruding from either side are parts of the squamosal bones to which the lower jaw articulates. Hands by D. Young. Photo by S. Godfrey.* ☼

Living Dolphins Respond to Magnetic Field

http://www.upi.com/Science_News/2014/09/29/Study-dolphins-attracted-to-magnets/4931412031155/?spt=sec&or=sn

Submitted by Victor Perez. ☼

Atlantic Needlefish

Strongylura marina*; too bad that it's dead, but such a beautiful fish and photo. Photo submitted by G. Dennis.* ☼

Peat Moss along Calvert Cliffs

*Although there may be a lot of peat moss (*Sphagnum *sp.) along Calvert Cliffs, this small patch towards the southern end of the cliffs is the first that I have ever seen. Photo by S. Godfrey.* ☼

Editor's Note: The following article was first published in September on-line at **myfossil.org**.
http://www.myfossil.org/wp-content/uploads/2014/09/Fossil-Newletter-Volume-1-Issue-3-September-2014.pdf?utm_source=The+FOSSIL+Project+Newsletter&utm_campaign=4877e571cc-The_FOSSIL_Project_Newsletter_Issue_3&utm_medium=email&utm_term=0_f6effd064d-4877e571cc-139167333

Miocene Peccary Lower Jaw

Although peccaries resemble pigs, they actually occupy their own family - the Tayassuidae. They are artiodactyls (i.e., the even-toed ungulates), a large group of herbivores that includes pigs, hippopotamuses, camels, llamas, deer, giraffes, antelopes, sheep, goats, and cattle. Remarkably, artiodactyls and whales (Cetacea) share a common ancestor as indicated by their DNA and anatomy. Consequently, they are grouped together into the Cetartiodactyla (from Cetacea + Artiodactyla).

*Figure 1. The collared peccary (*Pecari tajacu*) lives in the southwestern United States, and south into Central and South America. They are also known as Javelina, i.e., "javelin" in reference to their fearsome canines (see Fig. 2), which they will click together to warn predator's to steer clear. Peccaries are omnivores, so they will eat small animals, but they seem to prefer to feed on plants.*
Image from:
http://thepantanalsafari.blogspot.com/2014/02/invasive-species-threat-feral-pig.html

Like extant peccaries that live in social herds, their Miocene antecedents probably did likewise. Based on the number of peccary bones and teeth in the vertebrate fossil collection at the Calvert Marine Museum, Solomons, MD, they were amongst the most common land mammals living on the Atlantic Coastal Plane in Maryland during the Miocene epoch. Having said that, their remains are still very rare locally; which is why a recent discovery and donation to the museum is a very important addition to our collection.

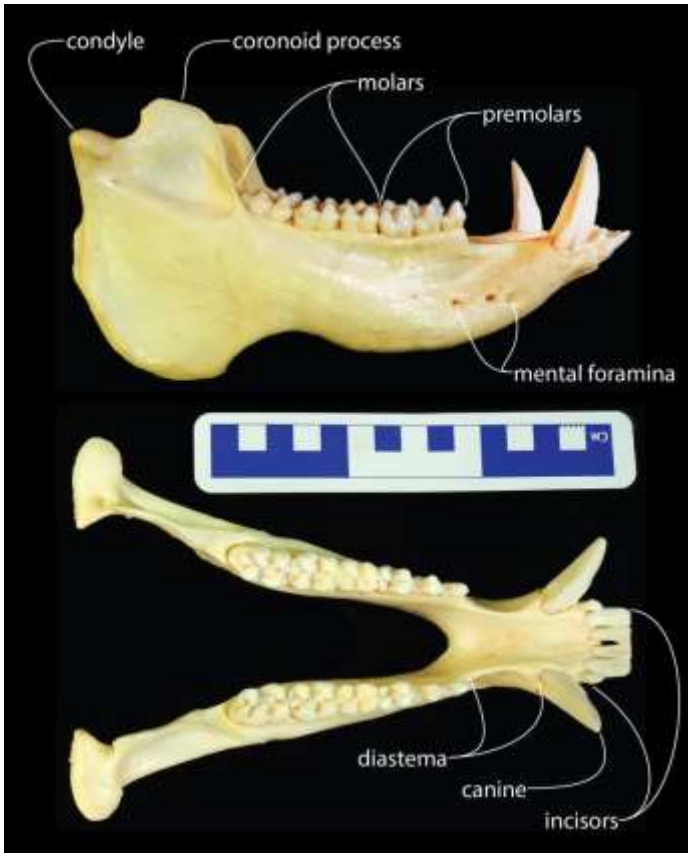


*Figure 2. Lower jaw of a modern collared peccary (*Pecari tajacu, *Fig. 1) in right lateral and dorsal views respectively. Notice the large canines, which are missing in the fossil peccary jaw (Fig. 3) that was found along Calvert Cliffs. Like many species of mammals, peccaries have a wide diastema (literally, a long gap) as a normal feature, between its canines and premolars. Scale bar is in centimeters.*

The peccary lower jaw, attributed to †*Dicotyles protervus* Cope 1868, in Figure 3 was found by Mike Ellwood (a member of the Calvert Marine Museum Fossil Club) in a block of sediment that had fallen from Calvert Cliffs. When he first spotted this 14-15 million-year-old jaw, waves from an incoming tide were already pounding at it; a rescue excavation was initiated immediately. Although he was able to save most of the jaw, the Chesapeake Bay claimed several incisors. In spite of

those losses, this is the most complete peccary jaw that has ever been found along Calvert Cliffs!

Figure 3. ***Mike Ellwood*** *found this nearly complete lower jaw of the Miocene peccary,* †Dicotyles protervus *Cope 1868. The right half of the lower jaw (i.e., a ramus) does not quite attach to the broken midline section of the left ramus. Notice also that the large lower canines (seen in the extant peccary shown in Fig. 2) and all but one incisor are missing, otherwise, this peccary jaw is the most complete one known from along Calvert Cliffs. Hands by K. Porecki, photos by S. Godfrey.*

That the fossilized remains of peccaries are rare along the cliffs comes as no surprise. The sediments that comprise these naturally eroding sea cliffs were deposited in a marine setting, not the place one would expect to find peccaries. Bloat-and-float is the easiest way to imagine the carcasses of large terrestrial animals finding their way out into the Miocene Atlantic Ocean.

Peccaries originated in Europe during the Late Eocene epoch. From there, they made their way to all continents except Australia and Antarctica, but then they became extinct in the Old World sometime after the Miocene. About three million years ago peccaries first entered South America during what is known as the Great American Interchange when the Isthmus of Panama connected North and South America.

Submitted by S. Godfrey. ☼

Fish Skeleton in Concretion

John Nance *found this fossilized partial bony fish skeleton preserved in a concretion along Calvert Cliffs. We hope to remove the entombing sediments to reveal more of its skull and skeleton. Photo submitted by J. Nance.* ☼

A Visit to the Miocene Sea at Maryland's Spectacular Calvert Cliffs: A Geologic and Paleontologic Overview

http://written-in-stone-seen-through-my-lens.blogspot.com/search/label/Atlantic%20Coastal%20Plain and see his many other posts!

http://written-in-stone-seen-through-my-lens.blogspot.com

By J B. Share, Boston, MA ☼

The World's Largest Trilobites

An excellent web site with references, see: http://trilobites.info/lgtrilos.htm

Submitted by R. Hazen. ☼

Editor's Note: The following work of art by **Bernie Houston** was spotted during Artsfest 2014 at Ann Marie Gardens (http://www.annmariegarden.org), in Solomons, Maryland.

The Warrior

***Before**: This piece of driftwood was found on the bank of the Potomac River (Maryland side) in early spring 2014. Photo submitted by B. Houston.*

The following two photographs show what it was transformed into by Mr. Houston!

***After**:* "The Worrier" *atop a bipedal dinosaur. Photos by S. Godfrey.*

Sea Drift Sculptures

See more of Bernie's amazing sculptural work at: Sea Drift Sculptures; www.seadriftsculptures.com.

☼

Tiny *Gyrolithes*: A Spiral-Burrow Trace Fossil

***Sarah Pocock** found this tiny* Gyrolithes *burrow along Calvert Cliffs. Hand by S. Pocock, photo by S. Godfrey.*

Although the organism that produced the Gyrolithes *burrows remains uncertain, evidence points to callianassid ghostshrimp, like* Glypturus *sp., a large extant species from Panama. Photo by Arthur Anker.* http://farm1.static.flickr.com/107/312165551_3a3b086d50.jpg

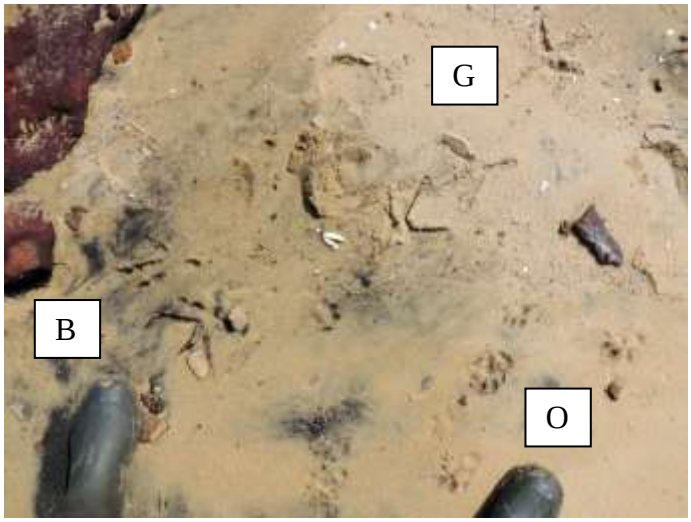
☼

Vulture Prints on the Beach

Vulture claw-marks gouged the cliff face (short dark mostly vertical lines) adjacent to a rockfish carcass that they were scavenging.

Vulture prints. Photos by S. Godfrey. ☼

Pes-Print Hat-Trick



*Footprints of a bald eagle (*B*), great blue heron (*G*), and otter (*O*) cross paths in the damp sand along Calvert Cliffs. Photo by S. Godfrey.* ☼

Life in a Beer…

NPR's skunk bear – Bone Dusters Paleo Ale; a video story about evolution through a glass of beer…cheers! Some of it was shot in CMM paleo collections.

http://www.npr.org/blogs/thesalt/2014/10/03/351510286/video-glimpse-the-history-of-life-in-a-beer

https://www.youtube.com/watch?v=LZzJGDNcW-I

Submitted by J. Osborne. ☼

20 Million-Year-Old Whale Fossils Found

http://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=11361084

Submitted by A. Alford. ☼

Giant Thresher Shark Tooth Found

John Nance *found this giant thresher shark tooth* (Alopias grandis) *along Calvert Cliffs.* ☼

Eratum: The closeup of a portion of a snake (*The Ecphora*, September 2014, page 6) is NOT of a venomous Copperhead--looks like another water snake. Best wishes, Harry.

Submitted by H. W. Greene
Professor and Stephen H. Weiss Presidential Fellow
Department of Ecology and Evolutionary Biology,
Corson Hall, Cornell University, Ithaca, NY 14853
Senior Scholar, Center for Humans and Nature:
http://www.humansandnature.org/
Research Associate in Residence, National Museum of Natural History (until July 2015)

My 2nd book:
http://www.ucpress.edu/book.php?isbn=9780520232754
How snakes eat:
http://www.youtube.com/watch?v=Mm9h6KE-ZOk&feature=youtu.be
Conservation dilemmas:
http://naturalhistoriesproject.org/conversations/ambulance-driver
Teaching the Tree of Life:
http://www.youtube.com/watch?v=F_C6e6rHYqM
☼

New Mexico Museum of Natural History Bulletins

A large collection of wonderful paleontological publications are now available as freely downloadable PDF's at:
http://econtent.unm.edu/cdm/search/collection/bulletins

Paper copies can be bought at our Museum's Natureworks store (see the museum's website).

Submitted by S. G. Lucas
New Mexico Museum of Natural History and Science
1801 Mountain Road N. W.
Albuquerque, New Mexico 87104-1375 USA ☼

Peccary Foot Bone

Al Berling *found this peccary foot bone (metapodial) along Calvert Cliffs, and* ***Peter Hamer*** *donated it to the museum in memory of Al; thank you! Hand by M. Baughman. Photos by S. Godfrey.*

Whale Hips…

http://news.usc.edu/68144/whale-reproduction-its-all-in-the-hips/

Cetaceans have pelvic (hip) bones, evolutionary remnants from when their ancestors walked on land more than 40 million years ago. These bones are still being influenced by the forces of sexual selection.

Submitted by J. Nance. ☼

Online CMM Fossil Club Membership Form at:
http://calvertmarinemuseum.com/DocumentCenter/View/145

2015 Membership Application/Renewal – Calvert Marine Museum Fossil Club

Name(s)

_____

Address

_____

City, State, Zip

_____

Phone(s) (Include Area Code)

_____ _____

E-Mail Address

_____

If you would like to receive the club's newsletter via regular post check here: ☐

Select ONE type of membership	☐	**Individual/Family (New)**	**$10.00**
(Enclose a check or money order for the indicated amount.)	☐	**Individual/Family (Renewal)**	**$10.00**

If known, please indicate the expiration date of your CMM membership. ____/_____/_____

If you are not a current member of the CMM, please complete a *CMM Society* membership application and send under separate cover. Your CMMFC membership will not be effective until receipt of *CMM Society* membership dues is confirmed and your signature is attached at the bottom of the form accepting the conditions of the CMMFC Liability Statement.

Children of CMMFC members who are dependent minors and living at home may accompany parents on any trip unless 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. Membership in the CMMFC and CMM do not expire concurrently, but if the CMM membership expires before the expiration date of the CMMFC the club membership shall be considered forfeit. All dues must be current for both the CMM & CMMFC for a person to attend any CMMFC trip.

CMMFC Liability Statement

The Undersigned hereby acknowledges his/her understanding that fossil collecting is an inherently physically demanding and 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 Calvert Marine Museum (CMM) or the Calvert Marine Museum Fossil Club, hereinafter collectively and individually referred to as "CMMFC Events", hereby releases the CMMFC, CMMFC Board members and officers, CMMFC 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 CMMFC Events.

The Undersigned agrees to comply with any and all CMMFC By-Laws and CMMFC Code of Ethics, and further by any rules and restrictions that may be communicated to the undersigned by the CMMFC Event leader and/or landowner and mine or quarry operator and acknowledges that failure to comply will result in immediate expulsion from the premises and/or expulsion from the Club.

The Undersigned acknowledges that this release covers all CMMFC Events and will remain in effect at all times unless or until it is revoked by written notice to the current President of the CMMFC 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:

Calvert Marine Museum Fossil Club, P.O. BOX 97, Solomons, MD 20688

CMMFC
P.O. Box 97
Solomons, MD 20688

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The Ecphora is published four times a year and is the official newsletter of the Calvert Marine Museum Fossil Club. **The Editor welcomes contributions for possible inclusion in the newsletter from any source. Submit articles, news reports of interest to club members, field trip reports, and/or noteworthy discoveries.** All opinions expressed in the newsletter are strictly those of the authors and do not reflect the views of the club or the museum as a whole.

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Newsletter website: http://calvertmarinemuseum.com/204/The-Ecphora-Newsletter