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**Whale Partial Skull Quarried**

Above: *Stephen Godfrey* digs around the back of a baleen whale partial skull before it is jacketed. The skull, in Bed 14 of the Calvert Formation, was not complete to begin with. This specimen represents just one of several whale and dolphin partial skulls that he and *John Nance* quarried recently. **Left:** The backfilled hole a day later showing some of the plant debris and clay that had slumped from high up in the cliff overnight. To the untrained eye, the dig site is virtually impossible to delineate. We are grateful to *Dr. Robert Hazen* for bringing this specimen to our attention. ☀
The Horse That Couldn’t Swim

While out collecting one morning a couple years ago I found a bone that at the time and prior to working at the CMM wasn’t noteworthy. However, Bill Counterman happened to show up as I was leaving the beach and emphasized to me that my find was important. Stephen Godfrey later confirmed that it was the metapodial of a Perissodactyl. (The term “metapodial” refers to the bones in either the front or hind limb that lie between the wrist or ankle joint and the more distal digits/phalanges. “Perissodactyls” are those ungulates with an odd number of toes; horses, tapirs, and rhinoceroses). Fred Grady further refined the identification of the bone as likely belonging to the genus Hipparion (Greek for "pony"), one of the three-toed horses. This long-lived Mio-Pliocene genus includes many species that thrived in North America and then spread to the Old World. The genus became extinct some time during the late Pliocene to early Pleistocene.

The cliffs along the Chesapeake Bay are famous for the marine fossils they preserve, but every once in a while a land mammal pops up. This horse apparently couldn’t swim very well. The metapodial is missing the proximal end making it more difficult to identify as a metacarpal or metatarsal.

Submitted by John Nance
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Calvert Marine Museum
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Inside Nature's Giants

The "Inside Nature's Giants" show (which featured detailed dissections of big extant animals, evolutionary inferences, fossils etc) from UK Channel 4 is now apparently debuting in the U.S.A., reformatted (with new footage) for Nat Geo Channel; crocodiles first it seems:

http://channel.nationalgeographic.com/episode/inside-the-croc-4307/Overview

short link: http://1wua.sl.pt

This Hipparion sp. (Miocene horse) metapodial (i.e., one of the long foot bones) is seen in posterior view. The top/proximal end of the bone is missing. Notice the articular condyle to which the hoofed toe jointed. It was found by John Nance and donated to the Calvert Marine Museum. Scan by S. Godfrey.
Aurora Fossil Festival

From left to right: Kathy Young, Donna Gameche, Mark Griffin, Bruce Hargreaves, and Tony Holt staff the CMMFC table during the Aurora, NC Fossil Festival; many thanks! P.S. The little head popping up on Marc’s right side is “Speedy,” the killer Chihuahua. Photo by Pat Young. ☼

Continued...

Bob Platt (left), Christa Conant (center in red), and Sandy Roberts (lower right) either prepared recently collected dolphin skulls or showed fossils from Calvert Cliffs to museum visitors. Photo by S. Godfrey. ☼

Deformed Mako Tooth

Zodman collected this Mako (Isurus hastalis) tooth as float from along Calvert Cliffs. The apex of the tooth was compressed slightly to one side during its formative stages. Consequently, notice on the right-hand side of the image, that the enameloid cutting edge of the tooth is folded immediately above where it abuts the tooth root. Tooth shown in labial view. Scan by S. Godfrey. ☼

Patuxent River Appreciation Days

During PRAD, Pam Platt, along with other Fossil Club members shared their enthusiasm and knowledge with interested visitors young and old. Photo by S. Godfrey.
Snake Vertebra from Calvert Cliffs?

Neal Bengison found and donated this snake vertebra to the Calvert Marine Museum. It was found along Calvert Cliffs while he was screen-washing sediments looking for shark teeth. I am not absolutely certain that it is fossilized. Comparing it with extant snake vertebrae should confirm its identity and status as a fossil or not. To my knowledge, no Miocene snake vertebrae are known from along Calvert Cliffs. However, Miocene snake vertebrae are known from a contemporary site in Delaware; i.e., The Pollack Farm Site. Scan by S. Godfrey.

Alopias grandis
The Serrated Form, another Find

Dr. Robert Hazen found another serrated version of Alopias grandis as float along Calvert Cliffs; a welcome donation, many thanks. Scan by S. Godfrey.

Burrowed Sea Cow Rib

Taphonomy is the study of how organisms decay over time and on how and if they become fossilized. There are many ways in which both chemical and biological agents destroy/recycle tissues including the hard ones like bone and shell. Pictured here is a dugong (Metaxytherium sp.) partial rib riddled with burrows along one edge. The excavations are just like those produced by the burrowing clam, Lithophaga (a.k.a. the stone-eating clam). Extant and prehistoric Lithophaga clams burrow into soft rock, coral, thick clam shells like Isognomon maxillata, Carcharocles megalodon teeth (see “Burrowed Megalodon Tooth” pg. 13 in The Ecphora; September 2008), and dense sea cow bone. The partial rib was found as float along Calvert Cliffs and donated to the CMM by Dr. Robert Hazen. Scan by S. Godfrey.

Club website: http://www.calvertmarinemuseum.com/cmmfc/index.html  Club email: CMMFossilclub@hotmail.com
Possible Shark Tooth Modified into an Arrowhead

Dr. Robert Hazen found and donated this small C. megalodon (?) tooth that might have been worked by Amerindians into an arrowhead. Jefferson Patterson Park and Museum (Maryland’s State Museum of Archeology) could neither confirm nor refute the suspicion. I have seen reports of fossil shark teeth being modified into arrowheads, but have yet to see a scholarly publication on the subject. It would be great to see an unequivocal example…any offers?

Scan by S. Godfrey.

Gomphothere Tooth Fragment

Dr. Robert Hazen found this small piece of a gomphothere tooth as float along Calvert Cliffs. In this image, the fragment is seen in cross-section through one of the conically-shaped cusps. Although not much of the tooth is preserved, there is no confusing it with a tooth from any other Miocene mammal from the Cliffs. The shape of the cusp, wrinkled texturing and great thickness of the enamel confirm this as gomphothere, almost certainly Gomphotherium calvertensis. The two arrows show how thick the enamel coating is over the dentine within the tooth. Donated to CMM by Dr. Hazen.

Scan by S. Godfrey.

Tracking a Predator

Scientists spent eight years tracking the movements of 179 great white sharks within the Pacific Ocean and discovered that they have predictable migration patterns between Hawaii and North America.

http://www.washingtonpost.com/wp-dyn/content/graphic/2009/11/03/GR2009110303427.html

Submitted by Doug Alves ☼

Prehistoric Pygmy Sea Cow Discovered in Madagascar


Submitted by Bruce Hargreaves ☼
Paleocene Pine Cone

This late Paleocene pine cone was prepared and donated to the CMM by Mike Folmer and Chuck Ball by way of Dr. Lucia Kuizon (National Paleontologist); many thanks. It derives from the Pamunkey Group, Aquia Formation, Piscataway Member along the Potomac River, Charles County, Maryland. Scan by S. Godfrey. ☉

Permission Denied…

Although we go to great lengths to save every skull that becomes exposed along Calvert Cliffs, from time to time, permission to quarry a skull is not granted. Here John Nance points to the very front end of what was a complete baleen whale skull when it was first brought to our attention just over one year ago. The dark object on the left-hand side of the photo comprises the more massive bones that form the braincase/squamosal complex of this skull. At the time this photo was taken (December 7, 2009), approximately ¼ of the skull had already sloughed off because of erosion. The shelly sediments will continue to erode until the skull is completely destroyed... alas. Photo by S. Godfrey. ☉

Hemipristis with Spall Fracture

Notice how most of the medial side of this H. serra tooth was sheared off, probably the result of an impact spall fracture. Collected by John Nance as float from Calvert Cliffs. Scan by S. Godfrey. ☉
2010 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 email check here: [ ]

Select ONE type of membership
[ ] Individual (New) $10.00
[ ] Individual (Renewal) $10.00
(Enclose a check or money order for the indicated amount.)

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 EXCEPT for 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. 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.

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**Mail To:**

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

Club email: CMMFossilclub@hotmail.com
Upcoming Events

Thursday, January 14, 2010, at 7:00 p.m. in the museum auditorium.

Archaeological Perspectives into Sea Level Rise within the Chesapeake Bay

Dr. Darrin Lowery will present Archaeological Perspectives into Sea Level Rise within the Chesapeake Bay. The lecture is free and open to the public. Dr. Ralph Eshelman will make introductory comments, and Wayne Clark will field questions about archaeological sites on the western shore following the presentation.

The Copenhagen Climate Conference opened with grim warnings of the apocalyptic dangers for mankind if world leaders fail to agree on a way to prevent global warming. It is a problem that many people find difficult to grasp. The first of four lectures on this topic at the Calvert Marine Museum, will begin by looking to the past for answers. Dr. Lowery has earned a reputation for both discovery of ancient human sites, and applying a fresh interpretation to his finds.

The focus of Dr. Lowery’s work is the long-term interrelationship between climate, geology, and culture. Through his research, he has demonstrated a remarkable ability to look at current landscapes and understand how they have changed over time. Landscape reconstruction is important for determining where archaeological sites are likely to be found. However, Lowery’s research also shows how a geologic understanding of landscape reconstruction is important for gauging the current condition and future of the Chesapeake Bay. Through various scientific fields of research, including geology, archaeology, and paleoclimatology, his talk will focus on how reading the landscapes of the past can inform our understanding of sea level rise.

This four-part series focusing on the Impacts of Climate is funded by matching grants from The Boeing Company, and the Southern Maryland Heritage Area Consortium and the Maryland Heritage Areas Authority. For additional information, please contact 410-326-2042, ext. 32.

February 13, 2010, Saturday. CMMFC Meeting at 1:00 pm. Free public lecture will follow at 2:30 in the Auditorium.

February 18, 2010, Thursday at 7 pm. Dr. Ralph Eshelman will present Sinking Lands and Rising Seas, putting the discussion of rising sea levels into a pre-historical perspective.

April 24, 2010, Saturday. CMMFC Meeting at 1:00 pm. Free public lecture will follow at 2:30 in the auditorium.

July 10, 2010. Saturday. SharkFest at the Calvert Marine Museum. Volunteers are needed to help with the Paleo Department and our Fossil Club exhibits. Please contact Stephen Godfrey at Godfresj@co.cal.md.us or by calling 410-326-2042 ext 28.

September 11, 2010, Saturday. CMMFC Meeting at 1:00 pm. Free public lecture will follow at 2:30 in the auditorium.

October 9-10, 2010. Saturday and Sunday. 10:00 am – 5:00 pm. Patuxent River Appreciation Days at CMM. Please contact Stephen Godfrey at Godfresj@co.cal.md.us or by calling 410-326-2042 ext 28, if you will be able to lend assistance for the event or wish to display some of your collection on one or both days.


Note: Field Trips will be announced in the March issue of The Ecphora.
The Ecphora is published four times a year and is the official newsletter of the Calvert Marine Museum Fossil Club. 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. Copyright on items or articles published in The Ecphora is held by originating authors and may only be reproduced with the written permission of the editor or of the author(s) of any article contained within.

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