



# The Mineral Newsletter

**Meeting: September 28 Time: 7:45–9:00 p.m.**

**Long Branch Nature Center, 625 S. Carlin Springs Rd., Arlington, VA 22204**

**Volume 56, No. 7**

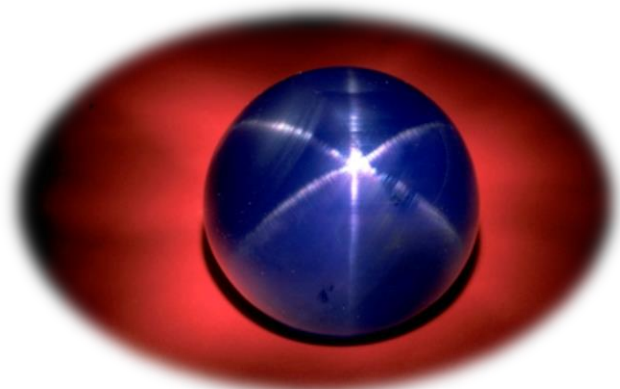
**September 2015**

You can explore our club website:

<http://www.novamineralclub.org/>

**Volunteer for our November club show at**

<http://vols.pt/fmg5iM> (more on page 4)



The *Star of Asia* at the Smithsonian , originally from Burma, weighs 330 carats. The star forms when titanium atoms are trapped within the growing corundum crystal. As the crystal cools, the titanium forms needlelike crystals of the mineral rutile, which orient themselves in three directions. Light reflecting off the needles produces the six-rayed star. Photo: Chip Clark..

## Sapphire September birthstone

### Northern Virginia Mineral Club members,

The club board will hold a meeting before the September club member auction. Board members will meet on September 28 at 6 p.m. at the Olive Garden.

*Olive Garden, Baileys Cross Roads (across from Skyline Towers), 3548 South Jefferson St. (intersecting Leesburg Pike),  
Falls Church, VA  
Phone: (703) 671-7507*

Reservations are under Kathy Hrechka, Vice-President, NVMC. Please RSVP to Kathy at 703-407-5393 or [kshrechka@msn.com](mailto:kshrechka@msn.com).

### Club Member Rocks-and-Minerals Auction Coming Up September 28 Program

**O**ur September club meeting will get off to a lively start with our club member auction! Proceeds from the auction are deposited into the Fred C. Schaefermeyer Scholarship Fund, which supports students in the field of geology.

Auctioneers, accountants, and runners are volunteers—help us out here, folks!



*Samples offered at the September 2014 NVMC auction included prehnite (above) and selenite (right).*

*Bring small bills, bid early and often, and help us move on to the next item. We need to be out of our meeting room by about 10 p.m.*

**\*\* Note Current Club Auction Rules\*\***

- Any member may offer up to 20 specimens or up to 4 flats for auction.
- Each flat is one auctionable item.
- The club gets **15%** of the purchase price; the remainder goes to the seller.
- Anyone may donate items to the auction to fully benefit the club (no money goes back to the donor).
- The minimum bid is **\$1** on any item. Bids above **\$20** increase by **\$5**.
- We start with a silent auction, so look carefully and start bidding. Items with multiple bids during the silent auction will be brought sooner to the vocal auction.

If you are offering specimens for auction, please use auction bid slips and an auction control form. You can find the slips and the form on the last pages of this issue and print them out.

Winning bidders must pay for the item promptly, with cash or check. ➤

## **The Prez Sez**

*by Wayne Sukow*

**O**ur newsletter editor is very patient with me because I'm usually slow in getting my PREZ SEZ out.

It's been a busy to hectic summer, with considerable travel: to northern California, Oregon, Wisconsin, Chincoteague Island in Virginia, Massachusetts, and Maine. We even had a flight canceled, which we did not know about until we tried to check in at the airport in Portland, ME.

I'm also completing donation of some forested property to the College of Forestry at Michigan Tech University, and I'm selling two 40-acre parcels to someone else. The property is all in Wisconsin, so that's more long-distance business to take care of, but it now looks like I'll get it all accomplished by the end of September.

My Prez Sez for our September newsletter has suffered as a result ... again. Sorry about that, Hutch.

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I've still been active in our hobby this summer, including preparing to do a return engagement on September 11 to the Chesapeake Gem & Mineral Society, which meets in Catonsville, MD. That's only a few days away!

However, I did take my own advice, as set forth in my June 2015 PREZ SEZ, which was to enjoy the summer. I DID!

So now I'm ready for the upcoming year of NVMC activities, and it'll be enjoyable. As I suggested in my June 2015 PREZ SEZ comments, "Join me!"

Your Prez ... ➤

## Previous Meeting Minutes June 22, 2015

by Dave MacLean, Secretary

**P**resident Wayne Sukow called the meeting to order at 7:45 p.m. at the Long Branch Nature Center in Arlington, VA. After the business part of the meeting, Jim Kostka presented the program—"Radioactive Minerals, Part 2."

### Recognitions

The president recognized past president Rick Reiber and guest Amber Sims.

The NVMC recognized Conrad Smith, who has talked about minerals at club meetings and Scout meetings. His Eagle Scout project included hands-on demos and visuals for fault models, volcanoes, minerals used in daily life, and plate tectonics.

### Deadline for Submissions

October 1

So we can send out the newsletter on time, please make your submission by the 1<sup>st</sup> of the month! Submissions received later might go into the next newsletter.

### Awards/Door Prizes

The president presented an award certificate to EFMLS Rockhound of the Year Jim Kostka.

Door prize donations came from Sue Marcus, Ti Meredith, and Steve Smith. The door prize winners were Pat Flavin, Bill Oakley, and Linda Smith.

### Announcements

A club or individual can sponsor a page on the Mindat website for \$50 per year.

Members are encouraged to visit the NVMC Facebook page and put photos or other items on it, such as comments.

### Business Items

The minutes of the May 27 meeting were approved as published in *The Mineral Newsletter*.

The annual meeting of the American Federation of Mineral Societies will be on October 15, 2015, in Austin, TX. The NVMC will help pay for one member to attend. Sheryl Sims volunteered.

The annual club show is coming up on November 21–22 at George Mason University (GMU) in Fairfax, VA. The GMU Department of Atmospheric, Oceanic and Earth Sciences will continue to emphasize its sponsorship of the show and the show's benefit to GMU.

One of the club co-chairs prepared a formal analysis of space rental costs for the show. The president presented the analysis. Fees quoted for the Hub Ballroom and for Hub rooms 1 and 2 are, respectively, \$1,581 per day and \$318 per day, for a 2-day total of \$3,798.

The fire/safety supervisor said that there must be fewer tables in the Ballroom this year. The revised NVMC floor plan shows 74 6-foot tables for the dealers. The plan eliminates the tables in front of the stage.



Club members at the NVMC's June 2015 meeting.  
Photos: Sheryl Sims.



The dealers in front of the stage will be moved to the Kids' Mini Mines space, and the Mini Mines will be moved to room 1 or 2. There will likely be enough space in rooms 1 and 2 for both the Mini Mines and Boy Scout merit badge work.

By motion duly made and seconded, the NVMC members present approved the following admission fees for the 2015 club show:

- Adults: \$6
- Seniors: \$5
- Teens (13–17): \$3

Admission will be free for children 12 and under, Scouts in uniform, and GMU students with valid IDs. A meeting notice card will entitle the bearer to an admission discount of \$1. ↗

## **The Annual NVMC Mineral Show—Volunteers Needed!**

*by Jim Kostka, Show Co-Chair*

**O**ur annual club mineral show is coming up in November! With sponsorship by George Mason University's Department of Atmospheric, Oceanic and Earth Sciences, this will be the NVMC's 24<sup>th</sup> Annual Gem, Mineral, and Fossil Show.

We will set up for the show on Friday, November 20. The actual show will take place on Saturday and Sunday, November 21–22. This is *your* show—we need your help!

It's easy to sign up online using VolunteerSpot. Just click on the following link: <http://vols.pt/fmg5iM>; or else type—or copy and paste—the URL into your browser. Review the options listed and choose the spots you like. Then sign up! You don't need to register an account or keep a password in VolunteerSpot.

VolunteerSpot does not share your e-mail address with anyone. But if you prefer not to use your e-mail address, you can always contact me at [jkostka@juno.com](mailto:jkostka@juno.com) and I can sign you up manually.

Just to let you know, there are four white display cases available for allotment. When they are all taken, that's it. If you have a great display case available, please let me know.

Your rocks are needed for the show! Please give generously! This is a great time to clean out your

garage and basement and donate to the club! In particular, we need moderately sized specimens suitable for the kids' tables, door prizes, and the silent auction.

- Kids Mini Mines—the size of a quarter to a half-dollar is best. Detailed information on the specimen is not necessary. Also needed are loose Herkimer diamonds for the Herkimer bin and lapidary scraps (small slabs, cabs, and cuttings) for the lapidary bins.
- Door prizes—pretty specimens are best, but relatively small (under 4 inches). Labels are desirable but not required.
- Silent auction—labeled and well-identified specimens are best. Again, the specimens should be moderately small.
- If you have something to contribute to the cause, bring it to the show—or contact Tom Taaffe, Jim Kostka, or Rob Robinson. ↗

## **Andy Muir: A Gem of a Guy**

*by Sheryl E. Sims*

**M**embers from several clubs were shocked and saddened by the news that our friend and fellow club member Andy Muir had passed away so unexpectedly on August 9, 2015.

Andy was an avid rockhound with a distinct taste for fluorescent minerals. Friendly, kind, and mild-mannered, Andy always brought smiles to our faces by popping in and out of the tarp he used to view his fluorescent minerals.

My memories of Andy are of his quiet humor and always running into him at our local mineral shows. Like some of the minerals that we might be fortunate to come across, Andy was a rare find. He will be missed not only by his wife and daughters but also by those of us who enjoyed his presence at our meetings and on our field trips. Andy was our friend, and he will be greatly missed. ↗





## Books by the Numbers

by Jim Brace-Thompson, AFMS Juniors Program Chair



**Editor's note:** The article is adapted from A.F.M.S. Newsletter (March 2015), p. 3.

When I'm making a school visit, students often ask questions like, "What are the 10 most valuable gemstones?" or "What are the 10 rarest minerals?" For whatever reason, we're all fascinated by numbers and lists, such as the Forbes 500 or achievements made in the first 100 days

of an American presidency. Here are some books you may want to consult:

**Albert B. Dickas, *101 American Geo-Sites You've Gotta See*** (Mountain Press, 2012). This book highlights spots with interesting things to say about geological history, with at least one site reported for each of our 50 states. Whether it's a meteorite crater, a volcano, or a petrified forest, there's one near you!

**Eric Chaline, *Fifty Minerals that Changed the Course of History*** (Firefly Books, 2012). Rocks, metals, and gemstones have been used in creative ways throughout recorded history and prehistory. Without flint, where would our caveman ancestors have been? Without the discovery of how to produce steel and aluminum, where would our current society be? Find out—then share the knowledge!

**Chris and Helen Pellant, *1000 Facts on Rocks and Minerals*** (Sandy Creek, 2004). This little pocketbook has all the answers in plain and simple language. It addresses questions ranging from "What is a rock?", to "What is my birthstone?", to "How do volcanoes form?", to "How are rocks used in my home?"

**Douglas Palmer, *A History of Earth in 100 Groundbreaking Discoveries*** (Firefly Books, 2011). This book shows how unexpected discoveries can change the way we think about Earth history, from the discovery of the Earth's oldest rocks, to the piecing together of evidence of an asteroid that did in the dinosaurs, to the totally unexpected discovery of "hobbits" living alongside our human ancestors on the island of Flores.

**Paul D. Taylor and Aaron O'Dea, *A History of Life in 100 Fossils*** (Smithsonian Books, 2014). Richly illustrated with huge photographs and text on facing pages, this book provides a primer on life through the ages that's understandable for both adults and juniors. The photos alone (of specimens from the Smithsonian Institution and the Natural History Museum in London) make this a great visual learning experience.

By the way, a word of caution. In this day and age of the Internet, kids think that anything and everything resides on the Web, and if they need a fact, they just need to google it. PLEASE—speaking as someone who works in academic publishing (full disclosure)—disabuse them of this notion!

Try googling various "Top Tens" (top 10 rarest gemstones; top 10 most deadly minerals; top 10 oldest fossils), and you'll get hits that are all over the map. You are led to thousands of sites, some of dubious origin and authority, leaving you wondering just what to trust.

The Web might be free and convenient, but that doesn't make it right. The Web is easy to populate with uninformed opinions, so there's an awful lot of garbage out there. But you can't go wrong with books like these! ➤

## Summer Teachers, Some Are Not



by Betsy Oberheim, EFMLS Each One Teach One Committee Chair

**Editor's note:** The article is adapted from EFMLS News (June 2015), p. 4. Can you think of anyone in our club you might want to nominate for the annual EFMLS Each One Teach One Award?



I'll bet some of your club members help with summer camps, Scouts, and so on. Do you ever have a "Sharing Program" at your club meetings? Perhaps you call it something like "What else do you do?" I got the idea from someone at the last EFMLS convention, the one in Hickory, NC.

We know our clubs love rocks and minerals, but many have other hidden talents that we never get to see. In our Central Pennsylvania club group, I know Bev collects beautiful Swarovski crystal, Brad

makes decoys and does soapstone carving, Toni makes beautiful stained glass objects, Mark plays the Indian flute, and so on. It's a super way to find out who also teaches kids and adults about our hobby outside the club.

And when you do find out, you can nominate them for the EFMLS Each One Teach One Award! Of course, you knew that was my point all along, didn't you?

There's still plenty of time for the 2016 nominations! If you have some deserving club member in mind, contact me and I'll send you the nomination form electronically! You can reach me at [Aoberheim3@comcast.net](mailto:Aoberheim3@comcast.net). ↗

## What's a Hole in the Ground?

by Sue Marcus

Seems easy enough to figure out what a hole in the ground is—it's, well, a HOLE!

Oh, but what about a mine? That can be a hole, like an underground shaft or adit; or it can be a really big hole, like an open pit mine or a quarry. What about a hole I dig in the garden—yup, a small hole that I fill in? And a bigger hole I dig?

Well everybody knows a hole is a hole. Or is it more complicated? Join me as we explore holes related to mining.

### Digging Holes

We'll start here at my home. My husband and I own our house. It is private property, and we can dig whatever holes we want. But if someone comes on to our property—even if they are trespassing—and falls into a hole, we may have insurance problems. And the utility companies have easements on our property, so they can dig holes here, too.

The federal government manages public lands, mostly in the West. Individuals and companies can stake a mining claim, just like in the old movies. A mining law from 1876 gives them that right, and it hasn't much changed in almost 140 years. If a person (or company or even a mineral club) has staked a mining claim, they can dig, blast, or bulldoze a hole or lots of holes in search of valuable minerals.

Now wait a minute, you might say. Aren't these public lands? Aren't they supposed to be managed



*Sketch of a historical mining operation. The federal government has more than a century of managing lands left over from mining claims. Source: BLM (2015).*

according to the principles of conservation, so that future generations can benefit from them as well?

Actually, yes! That's why those mining claims are regulated by an extensive—some would say oppressive—set of regulations that determine what can and can't be done on that land. When the prospectors are done extracting minerals, they must, according to the regulations, "reclaim" the land—fill in or recontour the holes so that the land can be used for other purposes.

Mining regulations have changed over time, as has our ability to monitor what is happening on those lands. Prospectors and miners haven't always reclaimed the land; there are thousands—possibly millions—of old mining holes on public lands. These can be dangerous; people or animals can fall in, often a one-way trip. Of course, some holes can also provide wildlife habitat, as when bats roost in abandoned mines. But the paramount federal concern is public safety. That can conflict with the desire of mineral collectors to leave holes open for future collecting.

There are lots of holes caused by mining that are not on public lands—at least, not anymore. If a mineral deposit is sufficiently valuable and the company or individual puts enough work and money into it, they may apply for a mining patent. If their work is sufficient (that is, the claim is "proved





*A really big hole in the ground! Club participants on a collecting trip to the Manassas Vulcan quarry include Ted Carver (left) and the author (middle), along with the quarry host.  
Photo: Ann Marie Papa.*

up”), they may receive a patent and the land is transferred from the federal government to the mining claimant.

The land then falls under state law, since it is no longer managed by the federal government. The mining claimant may then continue mining, build condos on the land, or do whatever else the state allows. State laws about reclaiming mined land vary, so the holes might stay—or not, depending on the state.

### **Access for Collectors**

Many lands that were once valuable for mining, particularly in the West, were patented and became private lands decades ago. There might still be holes on these lands, and they might be appealing to mineral collectors seeking what might have been overlooked. Permission of the private landowner is required for access.

Other lands, again mostly in the West, were mined long ago and remained public lands. Again, the old mining holes might appeal to collectors. Public access might be possible—if there are no active mining claims. Just as you don’t want people coming onto property you’ve rented and taking your things, mining claimants don’t want you violating their rights to what’s on the lands they’ve claimed.

Federal lands are managed by several different federal agencies. These lands can have different access

rules and mining regulations, depending on the laws governing the area’s management. For example, new mining claims are not permitted in wilderness areas. A mineral collector may take specimens, but power tools and motorized equipment are not allowed in federally managed areas that are congressionally designated as wilderness.

Managing a hole in the ground seems absurd—it’s a *hole*! As you can see, though, the land as well as the corresponding property rights and liabilities can vary.

Then we come to the societal issues. Should the federal government manage less land—land that could become private land?

On private lands, mineral collectors must have permission from the landowner for access and collecting: Think of the many pay-to-collect sites in this category. On the other hand, the landowner can blast away—or allow others to do so.

Another way to consider the public lands/private lands access issue for mineral collectors is to think about collecting access here in the East, where I live. There is not much public land managed by the federal government. There are national forests, few of which have collectable minerals; there are national parks, where collecting is not allowed; and there is *a lot* of private land.

Collecting is allowed on some private land—under tight restrictions, like at the New Jersey zinc mines for fluorescent minerals or the emerald mines in North Carolina. Of course, many private lands in the East—and in the West and in between—are either developed (with no collecting allowed) or paved (with no collecting possible).

Time for full disclosure: I am retired from the Bureau of Land Management, one of the major federal land management agencies. I’ve been a mineral collector for more than 50 years. I’ve collected on private lands, with the owner’s permission, and I’ve found that many privately owned properties that used to allow collecting are now closed to collectors.

I will be the first to admit that federal land management is imperfect. But at least I won't find a shopping mall covering a collecting area on federal land. And on some mining claims, smart and persistent professional mineral dealers mine stunning specimens and bring them to market—though sometimes at prices way more than I can afford.

## Managing Holes

A hole in the ground is still a hole in the ground—though whether mineral collecting is allowed at all, and what conditions for collecting and what regulations apply, depends on who manages the land. Currently, federal land that is open to new mining claims may be claimed by anyone (even a mineral club)—and that includes the right to exclude others.

As in many aspects of life, the devil is in the details: Should there be new, special regulations for sites on federal lands that are used by mineral clubs or individuals for collecting specimens rather than by commercial interests for mining metals or mineral materials? How can the federal government—*our* government—maintain public safety?

Large corporations can make large mining messes, although they are also more likely to have professional staffs of biologists, soil scientists, and others for reclaiming mining sites. Individual and group collectors (what federal regulators call “small miners”) disturb much less land—but they, too, can cause environmental degradation through poor collecting practices.

Who knew that managing holes was so difficult! ↗.

## Source

BLM (Bureau of Land Management). 2015. [Mining claims and mill sites](#). Washington, DC.

## Mineral of the Month The Not-So-Simple Sapphire

by Sheryl E. Sims

Sapphire is a variety of the mineral corundum—aluminum oxide ( $\text{Al}_2\text{O}_3$ ). The word sapphire comes from the Greek word *sappheiros*, meaning blue stone (Harper 2015). Typically, we think of sapphire as a beautiful blue gemstone.

However, sapphires come in a variety of hues. Trace amounts of the elements iron, titanium,

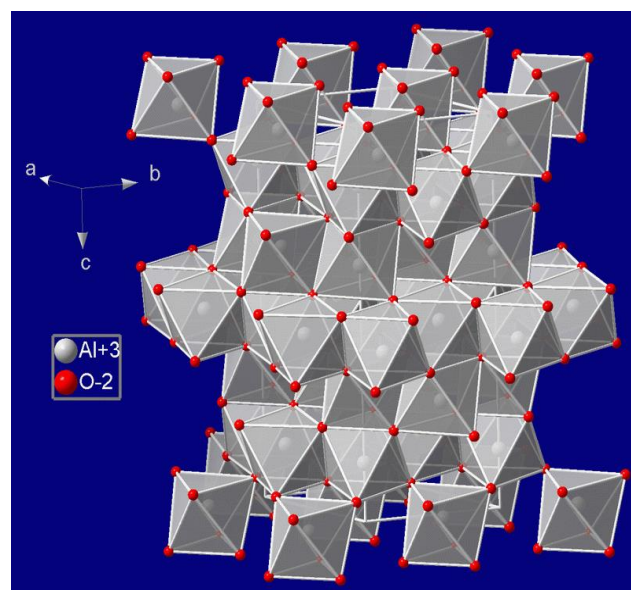


*Sapphires in various colors. Source: Wikipedia.*

chromium, copper, and magnesium color corundum, respectively, blue, yellow, purple, orange, and green. Chromium impurities in corundum yield a pink or red tint; the red variety is called ruby (Matlins 2010). Some sapphires are colorless, and some even include shades of black and gray. Blue is the most common color.

Blue sapphires are evaluated based upon the purity of their primary hue. Purple, violet, and green are the most common secondary hues found in blue sapphires. Violet and purple can contribute to the overall beauty of the color, while green is considered to be distinctly negative.

Blue sapphires with up to 15 percent violet or purple are generally said to be of fine quality. Blue sapphires with any amount of green as a secondary hue are not considered to be fine quality. Gray is the normal saturation modifier or mask found in blue sapphires. Gray reduces the saturation or



*Crystal structure of corundum. Source: Wikipedia.*



brightness of the hue and therefore has a distinctly negative effect (Thomas 2008).

The properties of sapphire include the following:

Category ..... Oxide mineral  
Formula ..... Aluminum oxide  
Color ..... Typically blue, but varies  
Crystal habit ..... As crystals, massive and granular  
Crystal system ..... Trigonal, symbol (32/m), space group R3c  
Fracture ..... Conchoidal, splintery  
Mohs hardness ..... 9.0  
Luster ..... Vitreous  
Specific gravity ..... 3.95–4.03

Sapphires are mined in China, Sri Lanka, Thailand, Madagascar, North America, Australia, and East Africa. While living in Thailand, my mother was gifted with some beautiful star rubies and sapphires. Some were blue and others smoky gray.

No matter what the color, I'd love to find any of specimens shown above in my collection! ♪

### Sources

Harper, D. 2015. Sapphire. [Online Etymology Dictionary](#).

Matlins, A.L. 2010. Colored gemstones. Gemstone Press.

Thomas, A. 2008. Gemstones: Properties, identification and use. New Holland Publishers.

### GeoWord of the Day

(from the American Geoscience Institute)

#### carbon spot

(a) A misnomer referring to any seemingly black inclusion or imperfection in a diamond. Under dark-field illumination, most "carbon spots" turn out to be neither black nor graphite. (b) A black flecklike or flakelike graphite inclusion in the body of a diamond crystal.

(from the [Glossary of Geology](#), 5th edition, revised)

## Grossular

by Sheryl E. Sims

Grossular is a calcium-aluminum mineral in the garnet gemstone group, and it is fast becoming one of my favorite minerals. Besides the fact that garnet is my birthstone, I find this mineral to be beautiful in all its various colors.

Surprisingly, the name comes from *grossularia*, the botanical name for gooseberry! Like gooseberry, this green garnet is found in Siberia. It ranges in shade from light to dark green. But grossular can also be found in yellow, pink, and cinnamon, and there is also a rare colorless form.

Its crystal system is cubic and its fluorescent properties are nearly colorless to light green. It is inert to weakly orange in longwave and weakly yellow-orange in shortwave. Grossular has a hardness of 7 to 7.5, with a greasy to vitreous luster.

The specimen pictured below was in my collection. I recently gave it to my boss's young son, who was bitten by his neighbor's dog. I thought that examining this beautiful mineral would help take his mind off of his recent trauma. It always works for me! ♪

### Source

No author. 2015. [Grossular](#). Wikipedia.



Grossular (hessonite), from the Jeffrey Mine in Asbestos, Quebec, Canada.  
Photo: Sheryl E. Sims.



## Story of Geology The Black Sea Flood and Noah

by Hutch Brown

*Editor's note: This article does not necessarily express the views of other NVMC members. If you want to comment or contribute to our newsletter, contact me at [hutchbrown41@gmail.com](mailto:hutchbrown41@gmail.com).*

The biblical story of Noah and the Great Flood had a tremendous effect on scholars across Christian Europe. Until the 19<sup>th</sup> century, most leading scientists, naturalists, and natural philosophers saw the Great Flood inscribed in the rock formations around them. Believers in the literal truth of the Bible still do (see, for example, Oard 2009).

### Multiple Flood Stories

But the story of the Great Flood is neither unique nor original. American Indian legends tell of a Creator covering the Earth with a flood, then restoring dry land with the help of animal prototypes (Turtle, Otter, Beaver, etc.) diving in the ocean for mud.

In Greek mythology, Zeus destroyed humankind for its wickedness by bringing about a great flood. Warned by his father, the Titan Prometheus, Deucalion built an ark that saved him and his wife, Pyrrha. Together, they recreated the world with help from Themis, the Goddess of Prophecy.

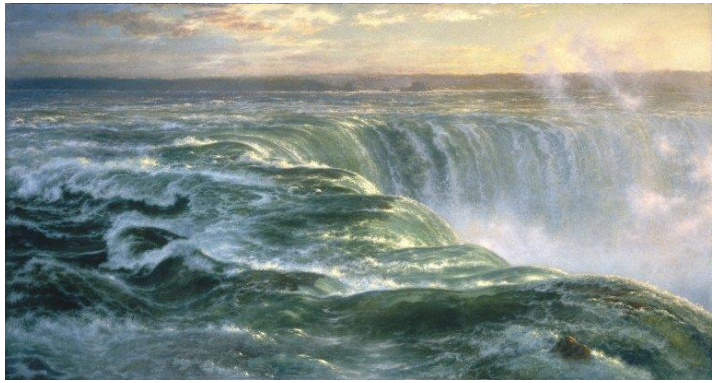
The Babylonian epic of Gilgamesh contains a tale strikingly similar to the story of Noah but older. The gods sent rains that caused a great flood. Warned by Enki, the God of Water, Utnapishtim built a boat that saved his family and friends as well as many animals.

Is it sheer coincidence that such farflung cultures have so similar a tale—the story of a global deluge? Could the story derive from ancestral memories of actual cataclysmic events?

### Glacial Lake Missoula

The Cordilleran Ice Sheet that once covered western Canada dammed the headwaters of the Columbia River, forming an enormous lake (fig. 1). As recently as 12,000 years ago, the valleys of what is now western Montana lay beneath 2,000 feet of water. Glacial Lake Missoula was as big as Lakes Erie and Ontario combined.

Over thousands of years during the late Pleistocene Epoch, the ice dam burst, only to form again. Whenever the dam burst, it released floodwaters



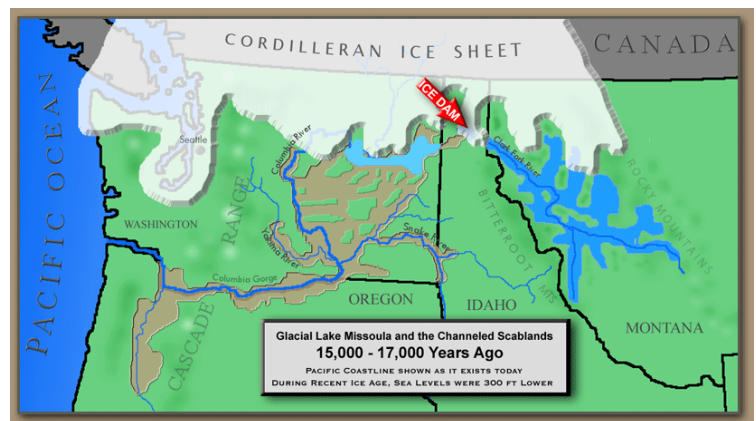
Louis Rémy Mignot, Niagara Falls (1866). *The Black Sea flood created a falls with a flow 200 times greater than Niagara.*  
Source: Wikipedia.

equivalent to 60 times the volume of the Amazon River. The great floods repeatedly scoured vast portions of what is now Oregon and Washington, sculpting the Columbia Gorge and shaping the region's famous coulees and channeled scablands (fig. 1).

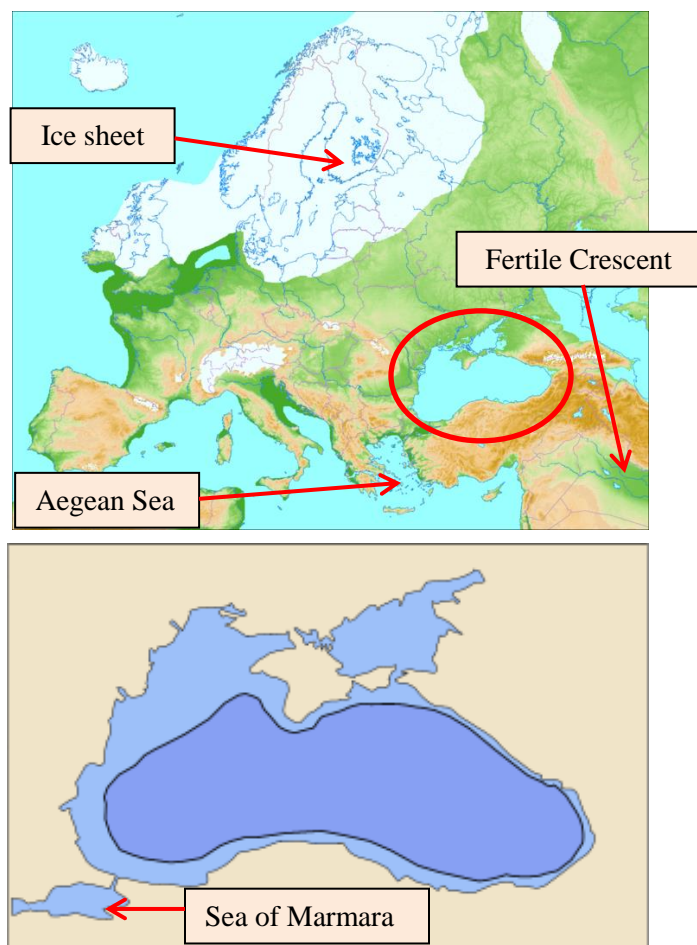
Could something similar have happened in the eastern Mediterranean region? Could a great flood have triggered stories passed down for generations in a region ranging from Greece to the Fertile Crescent?

### Ancient Flood

The answer might appear to be yes. Geologists have discovered evidence that rising seas about 6,000–8,000 years ago caused the Mediterranean Sea to breach the rim of the Black Sea basin, creating a waterfall with a flow 200 times the size of Niagara Falls (Ryan and Pitman 1998). The catastrophic flood that followed would have driven refugees from the Black Sea shores, inspiring disaster stories for generations to come.



**Figure 1**—During the last Ice Age, an ice dam (red arrow) formed an enormous reservoir called Glacial Lake Missoula. Whenever the dam burst, great floods scoured enormous downstream areas (brown). Source: Foster (2008).



**Figure 2**—In the Pleistocene Epoch, the Black Sea (top, circled) was a vast freshwater lake fed by meltwater from the ice sheet to the northwest. As the ice sheet retreated, some of the rivers changed course. Deprived of inflows, the Black Sea shrank in size (bottom). Source: Wikipedia.

During the Pleistocene Epoch—up to about 11,000 years ago—meltwater from great ice sheets to the northwest fed the Black Sea (fig. 2), which formed a vast freshwater lake with an outlet to the Aegean Sea. As the ice sheets retreated, some of the rivers reversed course, flowing into the newly formed Baltic Sea instead. Lake levels fell, and the Black Sea shrank in size and lost its outlet (fig. 2).

As global temperatures warmed and the great ice sheets melted, sea levels rose. Shorelines retreated around the Mediterranean Sea, which eventually burst through the Dardenelles to fill the depression that became the Sea of Marmara (fig. 2). (In some accounts, the Sea of Marmara already existed throughout the Pleistocene.)

As sea levels continued to rise, they finally poured from the Sea of Marmara over the edge of the Black Sea basin. A trickle became a torrent and finally an enormous falls, carving the Straits of Bosphorus.

Lake waters rose by about 6 inches per day over a period of up to 2 years, raising the level of the Black Sea by about 350 feet and extending its area by roughly 60,000 square miles (Ryan and Pitmann 1998).

Saltwater drowned the freshwater lake, destroying most life but laying the foundations for new saltwater ecosystems. Ryan and Pitman (1998) took cores of the Black Sea floor, discovering ancient river channels drowned by the flood. They also found the remains of mussels thousands of years old, both freshwater and saltwater. Through carbon-dating the fossils, they concluded that the Black Sea flood occurred in about 5600 BC. (Questions remain about the date.)

Although tectonic activity might have also contributed to water level changes in the Black Sea, the evidence for a flood is sound. But did people actually see it?

### Disaster of Epic Proportions

The flood occurred during the Neolithic (New Stone) Age, before discovery of metal technologies. Civilizations in the eastern Mediterranean region were beginning to develop agriculture. Neolithic cultures extended northward on both sides of the Black Sea, from the Fertile Crescent northwestward and from the Aegean Sea northeastward (fig. 2).

The plains around the Black Sea were fertile, with bounties of forage and wildlife, plus fish from the lake. Farming settlements likely abounded, with ample stocks of domesticated animals such as sheep and goats. The area was forested, offering plenty of fuel and building materials for homes—and for boats.

When seawaters formed an enormous saltwater falls, the sound would have been audible for miles. Reactions to the awesome sight would have ranged from shock to horror, particularly as the Black Sea began to rise. The rising waters forced people to take whatever they could and flee in a matter of months, weeks, or even days. Some might have left by boat.

For Neolithic communities in the region, the Black Sea flood was an unmitigated disaster. But was it the same as Noah's Flood?

### A Working Hypothesis

Probably not.



The tale of Noah and the Great Flood is so similar in its particulars to the earlier flood story in the Epic of Gilgamesh that both tales likely derived from the same oral tradition. Anthropologists say that oral histories drastically change in the retelling over thousands of years. For the Black Sea flood to have been the same flood as the one in the Epic of Gilgamesh, the story would have been passed down for 5,000 years in all its details, an improbable length of time.

Moreover, the Tigris and Euphrates Rivers in the Fertile Crescent are known for their seasonal flooding. Great rains have caused the rivers to flood enormous areas at times, consistent with the rains that caused the floods in both the Epic of Gilgamesh and the story of Noah—and consistent with the flood timespan in both stories. Accordingly, the likely source for both stories is a great flood caused by rain-swollen rivers in the Fertile Crescent thousands of years after the Black Sea flood.

All but conceding the point, Ryan and Pitman have called their connection of the Black Sea flood with the story of Noah no more than a working hypothesis.

### Corroborating Evidence

Still, the connection to the story of Noah inspired the oceanographer Robert Ballard and a team of scientists and engineers to search for clues to the past on the Black Sea floor. (Ballard is famous for discovering storied shipwrecks, including the *RMS Titanic* in 1985.)

In 1999, using GPS and sonar technology, Ballard's team began mapping the Black Sea floor. They

found a broad flat plain 20 miles wide from the present-day shoreline to the edge of an ancient lakebed (fig. 3). They also retrieved ancient seashells, including saltwater mollusks up to 6,800 years in age and extinct freshwater species that might have lived as early as 7,460 years ago. In effect, they confirmed the findings by Ryan and Pitman that the Mediterranean Sea flooded the Black Sea basin, burying an ancient freshwater lake.

Did people actually live on the plain before the flood? And did the waters rise quickly enough to cover artifacts before the waves destroyed them?

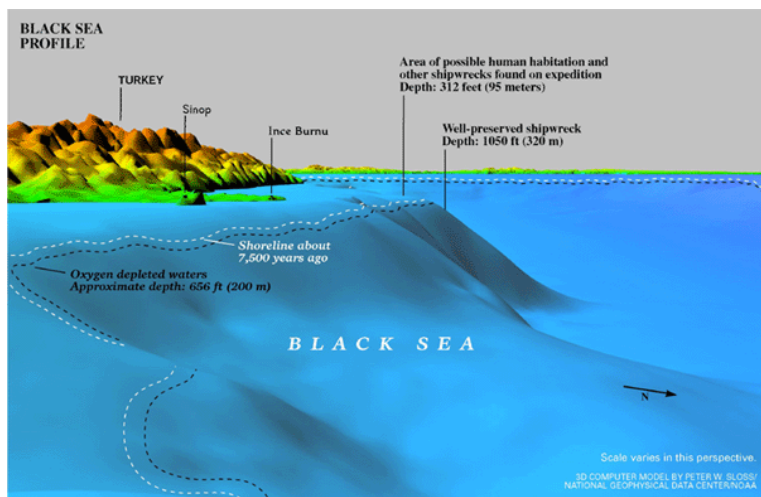
Again, the answer seems to be yes. In 2000, Ballard and his team started searching for the remains of human settlements on the Black Sea floor. They found tools and garbage heaps—evidence that people had once been there. But they needed actual structures.

They focused their search on ancient river channels, the fertile deltas that would have attracted farming communities. On a tongue of land between two ancient riverbeds, about 300 feet under water, the team found remnants of a dwelling, the surest sign of a permanent human presence. The site contained wooden beams, ceramic shards, and stone tools.

Although Ballard's team has since found additional manmade structures on the Black Sea floor, they have yet to positively prove that the structures were Neolithic dwellings. Their search continues.

### Inspiration from Noah's Flood

Buttressed by Ballard's findings, Ryan and Pitman stand by their conclusions about a Black Sea flood.



**Figure 3**—A flooded plain reaches 20 miles from today's Black Sea shoreline to the edge of an ancient lakebed (dotted white line). Source: Mitchell (2000).



Remains of an ancient human dwelling on the Black Sea floor about 300 feet under water. Source: Trimel (2000).

The evidence seems strong that the rising Mediterranean Sea spilled into the Black Sea basin about 7,600 years ago, drowning an ancient lakebed while flooding the surrounding plain. Forced to abandon their homesteads, entire communities apparently fled. Yet the case that Noah's Flood and the Black Sea flood were one and the same remains weak.

Nevertheless, the story of Noah continues to inspire geological research across the ages. In different ways—and to different ends—scholars from early modern Europe until today have scoured the geological record for clues to the Great Flood. ➤

*Next issue: Some early modern naturalists and natural philosophers, defying the biblical story of Creation, pioneered natural explanations for the origins of the Earth.*

### Acknowledgment

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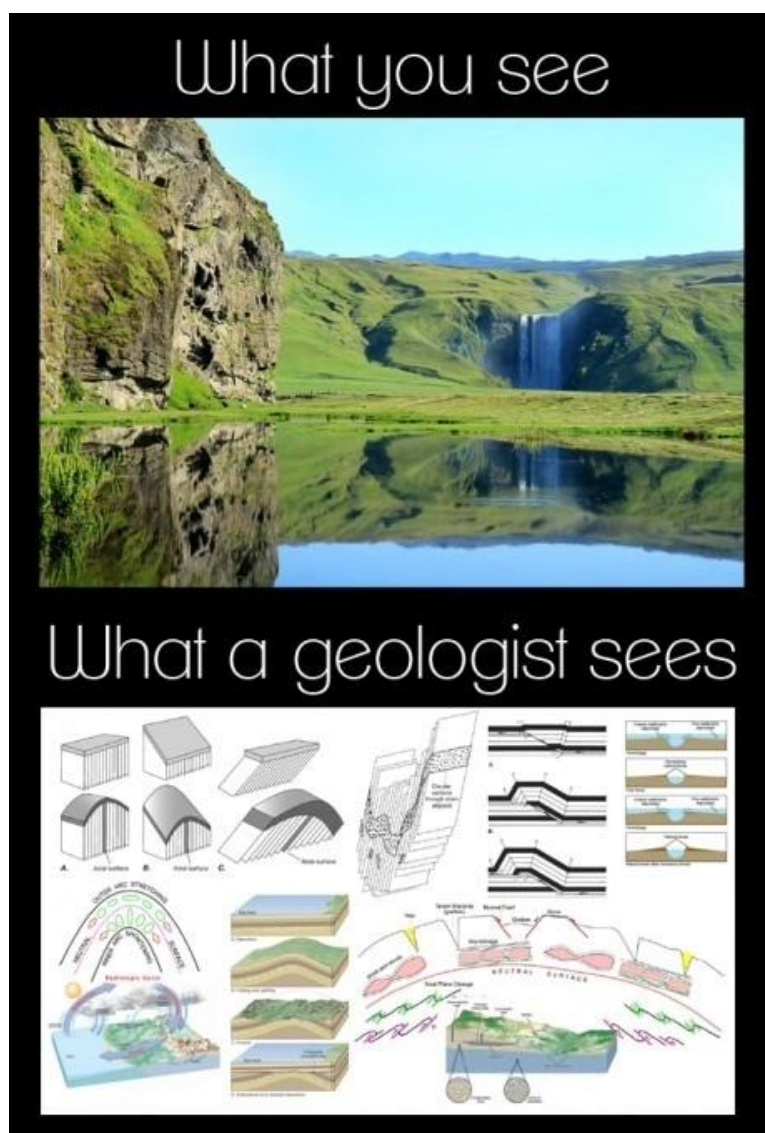
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Source: Pinterest, at <https://www.pinterest.com/pin/305681893428509565/>



## Shoebox Adventures Research Can Be Fun!

by Mike Seeds

**Editor's note:** The piece is adapted from *The Conglomerate* (newsletter of the Baltimore Mineral Society, Baltimore, MD), January 2015, pp. 6–7.

**M**ineral collecting is easy. Just pick up a rock and put it on your shelf. It's better if you can identify it and make a label, or you can buy a rock from a dealer and it will probably come with a label.

### Value of Research

Collecting that way can be fun and satisfying, but you can have more fun if you do a little research. An important law of mineral collecting is, "Every rock has to have come from somewhere." That can make a collection a lot more interesting.

The Internet is an astonishing asset for researching mineral specimens. You can look up specific minerals and locations and discover amazing things. One of the best mineral sources available is found at <http://www.mindat.org>, but there are lots of other sites for minerals. You can research locations such as specific mines and quarries and find information about cities and countries. Just a quick search can uncover amazing things about a mineral specimen.

### Carpathite

A specimen of carpathite came out of my shoebox recently, and I could have just cleaned it and trimmed it a bit and then put it in my collection. I bought it at a show for a few dollars because the name was new to me and it looked interesting—yellow and fibrous. The label said it came from the former Picacho Hg Mine in San Benito County, CA, a source of mercury, cinnabar, and valentinite.

A quick search on Mindat revealed the composition of carpathite. The formula is  $C_{24}H_{12}$ . That's less a formula for a mineral than for a gasoline additive or floor cleaner. How can a mineral form on Earth and not contain some calcium or iron or at least a little sodium? Where's the silicon?

Suddenly, that yellow carpathite is much more interesting, and when my friends look at

it, I say, "You will never guess what that stuff is made of, and it came from an old mercury mine." Researching the mineral made it special.

Not long ago, researching a mineral specimen called for a library of books and technical papers, but today we have the Internet. Just a quick search on a mineral name or a location can turn up all kinds of details.

### Andesine

At the same show where I found the carpathite, I bought a specimen of andesine. It was an ugly brown-black hunk, but it cost only a few dollars and the label said it came from "The Volcano Islands." I thought that might be near Iceland or maybe in the South Pacific.



*Andesine from the Volcano Islands, Ogasarawa Archipelago, Japan. (Field of view 7 mm.)*

A Google search of the Volcano Islands revealed that they are a group of three islands about 1,200 miles south of Japan. The islands are formed by volcanic peaks protruding above the ocean surface. Volcanism is active, with minor eruptions, hot pools, and vents. In fact, they were originally called the Sulfur Islands.

Andesine is a variant of albite (a form of feldspar), but this specimen looks like a bit of lava frozen suddenly into a glassy mass. No crystals are visible. It is just the sort of specimen you might expect to find in a volcanic area.

Two of the Volcano Islands are small and sparsely settled, but the larger island of 8 square miles contains a number of settlements. It isn't possible to say which island the specimen came from, but based on the size and development of the islands it is likely that it came from the larger island—the one known to history as Iwo Jima.



*Carpathite from the Picacho Hg Mine, San Benito County, CA. (Field of view 7 mm.) Photos: Mike Seeds.*



## Iwo Jima Connection

That little rock came from Iwo Jima! You have seen the World War II photo of American marines raising the flag on Mt. Suribachi on February 23, 1945, the fourth day of the invasion. The capture of Iwo Jima was one of the fiercest battles in the Pacific, lasting over a month. There were 26,000 American casualties, including 6,800 dead. Of the 21,000 Japanese troops defending the island, only 1,083 were taken alive. My dad was stationed on one of the destroyers involved in the battle.

That ugly bit of andesine was probably on Iwo Jima during the battle. Maybe it was part of the extensive bunkers and tunnels the defenders had dug, or maybe it was blown out of the ground by a 1-ton shell fired from an offshore ship. Maybe it remained peacefully buried near a volcanic vent while the battle raged. Somehow it was there, and somehow it caught my eye on a dealer's table. It will be a special mineral in my collection. I would never have known if I hadn't googled the Volcano Islands. ↗

## Web-Based Resources for Research

by Hutch Brown

**Author's note:** This is a companion piece to the preceding article by Mike Seeds, building on his call for re-searching minerals. Here, I describe some of the resources available for doing so on the Web.

I once spent whole days in research libraries such as the Library of Congress poring over materials while writing research papers. As a policy analyst for the U.S. Forest Service, I still write research papers, but I haven't been to a research library in years.

Why? Because I can now find so much of what I need on the Web. That includes the materials and images I need to write on geology for our newsletter. The Web has tremendous resources!

With that said, you need to be careful in using what you find on the Web. You also need to be careful to use appropriate citations. The following resources are available for your use.

[Wikipedia](#) is best used for general information only, because its standards fall far short of peer-reviewed research. If you are researching for an article in our club newsletter, it is best to use at least one additional source, even if just an encyclopedia.



*Image of a diamond in the rough on Wikipedia. The image came from USGS and is therefore open to public use.*

However, materials on Wikipedia are generally free of copyright, so you can readily borrow images to illustrate your article. To make sure, just click on the image and the source information will pop up.

For example, if you go to “Diamond” on Wikipedia, you will see a good image of a diamond in the rough (above). You can use the image because it came from a USGS source. All federal materials are in the public domain and therefore open to public use.

[Mindat](#), founded in 2000, has perhaps the largest collection of mineral photos in the world. You can find detailed information about almost any mineral you want, along with gorgeous photos of spectacular specimens.

Mindat has a lot of technical information. It describes localities and the minerals found there. It also gives information about individual species, such as how they were named, where they are found, and what their physical and chemical properties are.

Most images are copyrighted. The owners tend to allow free use for personal or educational purposes (such as a club newsletter), but you have to track them down and get permission. However, you can also find great photos that are not copyrighted.

[Gemdat](#), like Mindat, is an easy-to-use Website specializing in gemstones (including cabochons). It has a huge collection and outstanding photos, and you can search for gemstones by such features as color.

Again, most images are copyrighted. To use them, you need to track down the owners and get permis-



Image of [ametrine](#) (a cross between amethyst and citrine) from the Smithsonian. This 24.15-ct specimen is from the Anahi Mine in Puerto Suarez, Santa Cruz Province, Bolivia. Photo: Chip Clark.

sion, which most will readily give for personal and educational purposes.

The [Mineralogy Database](#) (or webmineral.com) has a wealth of information about minerals in categories including flame tests, radioactivity, and pronunciation (just to name a few). It also has a huge gallery of minerals, with key information about each specimen. Many of the images are of microminerals or from scanning electron microscopes.

However, the information about individual specimens is limited, and the site has not been updated since 2012. Moreover, every photo I've seen has been copyrighted, so you will have to contact the owner for permission to use the image. Although the site contains links to the owners, the links I've used either don't work or don't put you directly in touch with anyone, so you have to further explore.

The [Smithsonian Gem Gallery](#) allows you to view gorgeous photos of the Smithsonian's gem, mineral, and meteorite collections, with detailed descriptions of individual specimens. You can also find galleries of birthstones and recent acquisitions.

The Smithsonian allows personal, educational, and noncommercial use of its materials, provided the author/source of the material is cited along with URL links to the Smithsonian's own Website and, if available, to the author/source's Website.

If you don't want the hassle of tracking down owners to get permissions, this is one way to go. You might use the other Websites for all the mineralogical information they contain, then go to this one for a great image, such as the ametrine to the left.

And if you want a name specimen—one with a special reputation (such as the Hope Diamond)—this is where to find it. As you might expect from a museum, the site gives histories of individual specimens.

The [USGS Denver Library Photographic Collection](#) is a useful collection of photos that you can use for free. The images are of individual rocks and minerals as well as of large formations such as limestone cliff. However, most images are in black and white, and beautiful photos of individual specimens are few.

The [National Park Service](#) has some of the nation's best Websites for [spectacular landforms](#), in many cases replete with expert [geological explanations](#). Yellowstone National Park alone has an online gallery of 8,000 images—imagine the possibilities!

Because Americans pay for it with their taxes, every image on a federal Website is in the public domain. You are more than welcome to explore and use! ↗



Image from the National Park Service of a spectacular sandstone formation in Arches National Park in Utah.

## Upcoming Events (of interest in the mid-Atlantic region)

### September

**18–20: Fishersville, VA**—Shenandoah Valley Gem and Mineral Society, 48<sup>th</sup> annual Gem and Mineral Show; Augusta Expo, 277 Expo Road; Fri 2–6, Sat 10–6, Sun 11–5.

**19–20: Mays Landing, NJ**—Cape-Atlantic Rock Hounds Annual Fall Gem, Jewelry, Rock, Mineral and Fossil Show; 2641 Cologne Ave.; Sat/Sun 9–5; info: call Billie Brockhum at 609-879-1179

**26–27: West Friendship, MD**—51st Annual Gem, Mineral & Jewelry Show; Gem Cutters Guild of Baltimore; Howard Co. Fairgrounds.

**26–27: Franklin, NJ**—59th Annual Franklin-Sterling Gem & Mineral Show; Franklin Mineral Museum; Franklin School, 50 Washington Ave; Sat 9–5, Sun 10–4; Outdoor Swap: Sat 7:30–6, Sun 10–5; adults \$7, children 6–16 \$4; info: <http://spmom3.wix.com/franklin-gem-mineral>.

### October



**23–25: Austin, TX**—AFMS Convention and Show, hosted by the South Central Federation.

**24: Albany, NY**—Gem, Mineral & Jewelry Festival & Auction; Saco Valley Gem & Mineral Club; 9–5; Albany town hall, Albany, NY; info: [jherndon1@roadrunner.com](mailto:jherndon1@roadrunner.com).

**24: Fairless Hills, PA**—Ultraviolation: Fluorescent Mineral Show; Rock and Mineral Club of Lower Bucks County, PA; First United Methodist Church, 840 Trenton Road, Fairless Hills, PA; 9–5; adults \$2, children under 13 free; info: Chuck O'Loughlin, 856-663-1383; [ultraviolation@yahoo.com](mailto:ultraviolation@yahoo.com).

### November

**7–8: Oaks, PA**—Gemarama 2015: Rocks in the USA; Tuscarora Lapidary Society; Sat 10–6, Sun 10–5; Hall C, Greater Philadelphia EXPO Center; info: [www.lapidary.org](http://www.lapidary.org).

**21–22: West Palm Beach, FL**—49th Annual Gem, Mineral, Jewelry, Bead and Fossil Show; Gem & Mineral Society of the Palm Beaches; South Florida Fairgrounds Expo Center East, 9067 Southern Blvd., West Palm Beach, FL; Sat 9–6, Sun 10–5; adults \$9, children under 12 free, free parking; in-

fo: Jeff Slutzky, 560-585-2080,  
[show@gemandmineral.cc](mailto:show@gemandmineral.cc)

**27–29: Salem, VA**—36th Annual Roanoke Valley Mineral & Gem Society Show; Salem Civic Center, 1001 Boulevard, Salem, VA; Fri 2–7, Sat 10–6, Sun 12–5; 3-day ticket \$4, under 16 free, free parking; info: [CKWLT@aol.com](mailto:CKWLT@aol.com)

### December

**5–6: Miami, FL**—Gem, Jewelry, Mineral, and Fossil Show; Miami Mineralogical and Lapidary Guild; Evelyn Greer Park, 8200 SW 124 Street, Pinecrest, FL, just one block off US 1; Sat/Sun 10–5; adults \$4, children under 12 free, free parking; info: [www.miamigemandmineral.com](http://www.miamigemandmineral.com).

### February

**19–21: Indianapolis, IN**—GeoFest: 14th Annual Indiana State Museum Fossil, Gem and Mineral Show; Fri/Sat 10–5, Sun 11–4; museum admission: adults \$13, seniors \$12, children \$8.50; info: Peggy Fisherkeller, 650 West Washington Street, Indianapolis, IN 46204; 317-232-7172; [pfisherkeller@indianamuseum.org](mailto:pfisherkeller@indianamuseum.org); Website: [www.indianamuseum.org](http://www.indianamuseum.org).

### March

**5–6: Newark, DE**—53rd Annual Earth Science Gem and Mineral Show; Delaware Mineralogical Society, Inc.; Delaware Technical and Community College, 400 Stanton-Christiana Road, Newark, DE (I-95 Exit 4B); Sat 10–6, Sun 11–5; adults \$6, seniors \$5, kids 12–16 \$4, 11 and under free; info: [www.delminsociety.org](http://www.delminsociety.org) or contact [gene@fossilnut.com](mailto:gene@fossilnut.com) or call Wayne Urion at 302-998-0686.

**19–20: Sayre, PA**—47th Annual Che-Hanna Rock & Mineral Club show; Athens Twp. Volunteer Fire Hall, 211 Herrick Ave; Sat 9–5, Sun 10–4; info: Bob McGuire at 570-928-9238 or [uvbob@epix.net](mailto:uvbob@epix.net).





## AUCTION BID SLIP

ITEM # \_\_\_\_\_

DESCRIPTION \_\_\_\_\_

FROM \_\_\_\_\_

Starting Bid amount: \_\_\_\_\_

*Bidders: You need to bid on this item if you want it to be auctioned! Place bid below.*

NAME BID

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## AUCTION BID SLIP

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DESCRIPTION \_\_\_\_\_

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Starting Bid amount: \$2 \_\_\_\_\_

*Bidders: You need to bid on this item if you want it to be auctioned! Place bid below.*

NAME BID

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## AUCTION BID SLIP

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*Bidders: You need to bid on this item if you want it to be auctioned! Place bid below.*

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*Bidders: You need to bid on this item if you want it to be auctioned! Place bid below.*

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# NORTHERN VIRGINIA MINERAL CLUB AUCTION CONTROL FORM

NAME: \_\_\_\_\_ CODE: \_\_\_\_\_

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**TOTAL** \_\_\_\_\_

RECEIVED BY SELLER \_\_\_\_\_

DATE: \_\_\_\_\_



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## The Northern Virginia Mineral Club

You can send your newsletter articles to:

[news.nvmc@gmail.com](mailto:news.nvmc@gmail.com)

**Visitors are always welcome at our club meetings!**

### RENEW YOUR MEMBERSHIP!

#### SEND YOUR DUES TO:

Kenny Loveless, Treasurer, NVMC  
PO Box 10085, Manassas, VA 20108

**OR**

Bring your dues to the next meeting.

**Purpose:** To promote and encourage interest in and learning about geology, mineralogy, lapidary arts, and related sciences. The club is a member of the Eastern Federation of Mineralogical and Lapidary Societies (EFMLS, <http://www.amfed.org/efmls>) and the American Federation of Mineralogical Societies (AFMS—at <http://www.amfed.org>).

**Dues:** Due by January 1 of each year; \$15 individual, \$20 family, \$6 junior (under 16, sponsored by an adult member).

**Meetings:** At 7:45 p.m. on the fourth Monday of each month (except May, November, and December)\* at **Long Branch Nature Center**, 625 Carlin Springs Road, Arlington, VA 22204. (No meeting in July or August.)

*\*Changes are announced in the newsletter; we follow the snow schedule of Arlington County schools.*