EARTHQUAKE
e-Newsletter about what's movin' and shakin' at the Earth Science Museum

Earth Science Museum, 3215 W. Bethany Home Rd., Phoenix, AZ 85017
www.earthsciencemuseum.org, scote@earthsciencemuseum.org, 602-973-4291

December 2024
Volume 13, Issue 12

ESM OUTREACH UPDATE

Mardy Zimmermann, Outreach Coordinator

Outreach

There are no ESM outreach activities to report this month.

◊ ◊ ◊

Christmas Tree Minerals

By Harvey Jong

Christmas time is here again which means it's time for another Christmas-themed article. In previous newsletters, we focused on minerals with the traditional red and green colors. For this article, we'll explore specimens with shapes resembling the centerpiece of the holiday celebration – the Christmas tree.

Some Background on the Christmas Tree

We'll start with a little bit of history about the Christmas tree. The tradition has been traced back to the early Romans who celebrated the winter solstice with a feast called Saturnalia and decorated their homes with evergreen boughs. Germany began the custom of decorating trees around the 16th century.

England's Royal Family Gather around a Christmas Tree

J. L. Williams illustration for *The Illustrated London News*, Christmas Number 1848, - PD, via Wikimedia Commons

The popularity of the Christmas tree, however, soared around 1846 when England's Queen Victoria (1819-1901) and her husband German Prince Albert (1819-1861) were depicted with a tree.

German immigrants brought the festive icon to America, but the adoption of Christmas trees was limited as Puritan leaders viewed them as pagan symbols. Laws were enacted that penalized people for hanging Christmas decorations. This restriction continued until the 19th century when the influx of German

and Irish immigrants made celebrating with trees more acceptable.

Arizona's first known Christmas tree may have been decorated in 1865 (Zeller, 2005). Margaret McCormick (1843-1867), the young wife of Richard Cunningham McCormick, Jr. (1832-1901) who was the second governor of the Arizona Territory, had arrived in Prescott by the Christmas of 1865. She proposed and helped adorn a tree which was set up in the front room of the Governor's Mansion.

Governor's Mansion of the Arizona Territory

Jack Boucher (1931-2012) photo, - PD, via Wikimedia Commons

This log house was constructed in 1864 and was called a "mansion" since it was considered upscale compared to the shanties and tents in the Prescott area at that time. It briefly served as the governor's office and home until the state's capital was moved to Tucson and later to Phoenix.

Christmas Tree Attributes

Christmas trees come in a variety of different shapes, sizes, and colors depending on personal preferences and display considerations. One key attribute is the tree's profile which refers to its overall shape based on height and width. Some common profiles and associated proportions include:

- Full profile: a height/width ratio of 1.5 or less

- Medium profile: a height/width ratio of around 1.5 to 2

- Slim profile: a height/width ratio of 2 to 2.5

- Pencil profile: a height/width ratio of 2.5 or more

The tree's branches represent another important characteristic and may appear in either an upswept or down swept position. Some trees may feature dense, lush branches, while others are loose and airy.

Artificial trees introduced a wide range of colors and different lusters.

Arborescent Minerals

Given such a diverse set of attributes, many different minerals may resemble a Christmas tree. Arborescent minerals are minerals that exhibit a branching or tree-like structure and represent a large source of potential candidates. These minerals form in environments that favor dendritic crystal growth such as:

1. Rapid cooling or evaporation: temperature or concentration gradients may lead to crystallization in branching structures.
2. Precipitation from solution: solutions with several dissolved minerals may precipitate at different rates producing tree-like shapes.
3. Presence of impurities: impurities may serve as nucleation sites and cause uneven crystallization that develop into complex branching patterns.

Tree-like forms may also appear due to crystal twinning, hopper growth, or some serendipitous breakage when a sample was collected.

A Few Notable Examples

Based on overall shape, a wide variety of minerals may qualify as Christmas tree minerals. Native element minerals, however, appear frequently and often in dramatic fashion due to their tendency to exhibit lustrous dendritic growth.

Listed below in alphabetical order are specimens with varying degrees of perceived Christmas tree "morphology".

Adamite and Aragonite
Rob Lavinsky photo, iRocks.com, - CC_BY_SA-3.0, via Wikimedia Commons
Santa Eulalia District, Chihuahua, Mexico
4.5 x 3.1 x 2.6 cm, largest adamite sphere is 1.5 cm across
Bright green balls of adamite decorate this tree of aragonite.

Andradite var. Dematoid Garnet with Stilbite-Ca
Rob Lavinsky photo, iRocks.com, - CC_BY_SA-3.0, via Wikimedia Commons
Antetezambalo (Tetezambato), Ambanja District, Antsirnanana Province, Madagascar
4.6 x 4.6 x 2.5 cm, andradite and stilbite-ca crystals up 1 cm in size
This tree-like cluster features an unusual association of light emerald-green andradite crystals with snow-white crystals of stilbite-Ca.

Aragonite
National Park Service Gallery photo, - PD, via Wikimedia Commons
Wind Cave National Park, Custer County, South Dakota
This speleothem consists of a cluster of white acicular aragonite crystals and is known as a frostwork. At Wind Cave, the delicate structures may be up to a foot tall with radial sprays of pin-size crystals less than 5 cm (2 in) long (KellyLynn, 2009).

Baryte
Rob Lavinsky photo, iRocks.com, - CC_BY_SA-3.0, via Wikimedia Commons
Machów Mine, Tarnobrzeg, Podkarpackie, Poland
10.0 x 9.3 x 4.4 cm
Flowery clusters of baryte crystals cover this full profile tree-like specimen.

Baryte with Mimetite
Rob Lavinsky photo, iRocks.com, - CC_BY_SA-3.0, via Wikimedia Commons

Rowley Mine, Theba, Maricopa County, Arizona
5.2 x 4.8 x 3.3 cm
This group of intergrown baryte blades suggests a full profile Christmas tree. Some of the barytes are adorned with “garlands” of tiny orange mimetite crystals.

Bismuth
APN MJM photo, - CC_BY_SA-3.0, via Wikimedia Commons
Lab-grown bismuth crystals form this medium tree of hopper crystals with iridescent colors. The multi-color patterns are due to light interference from a thin oxide layer.

Calcite
Rob Lavinsky photo, iRocks.com, - CC_BY_SA-3.0, via Wikimedia Commons
Wenshan Mine, Dulong ore field, Yunan Province, China
7.1 x 6.2 x 5.4 cm
A stacked cluster of calcite crystals branching out from a central “trunk” creates this tree-like formation.

Chalcopyrite var. "Blister Copper"
Rob Lavinsky photo, iRocks.com, - CC_BY_SA-3.0, via Wikimedia Commons
Bristol Copper Mine, Bristol, Hartford County, Connecticut
11.5 x 7.4 x 5.9 cm
The tree-like shape of this specimen involves clusters of a rare variety of iridescent botryoidal chalcopyrite.

Chrysocolla and Malachite
Rob Lavinsky photo, iRocks.com, - CC_BY_SA-3.0, via Wikimedia Commons
Kolwezi, Katanga (Shaba), Democratic Republic of Congo
6.4 x 6.4 x 3.4 cm
A colorful botryoidal cluster of layered chrysocolla and malachite forms this tree structure. Tiny distinct malachite crystals appear on some of the spheres.

Copper

Rob Lavinsky photo, iRocks.com, - CC_BY_SA-3.0, via Wikimedia Commons
Chino Mine, Santa Rita, Grant County, New Mexico
4.8 x 1.4 x 1.2 cm
This pencil tree shape is made up of thick spinel-twinned copper crystals with a sharp termination.

Copper
Rob Lavinsky photo, iRocks.com, - CC_BY_SA-3.0, via Wikimedia Commons
Bisbee, Warren District, Cochise County, Arizona
4.6 x 4.5 x 2.5 cm, crystals up to 0.6 cm across
An interconnected group of bright copper crystals create the tree-like appearance of this specimen. Note that the photo has been rotated 180 degrees to present a tree orientation.

Diamond (Macle twinned)
Rob Lavinsky photo, iRocks.com, - CC_BY_SA-3.0, via Wikimedia Commons
South Africa
1.5 x 1.5 x 0.4 cm, 9.94 carats
The rare occurrences of triangular-shaped twinned diamond crystals are referred to as macles. (derived from the Old French word for “club” or “mace”) Since these crystals look like they have been naturally cut, they are sometimes used for one-of-a-kind jewelry pieces.

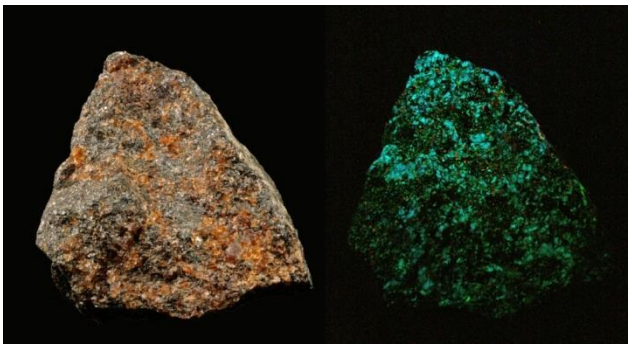
Dioptase with Malachite

Rob Lavinsky photo, iRocks.com, - CC_BY_SA-3.0, via Wikimedia Commons
Tsumeb Mine, Tsumeb, Nambia
12.0 x 11.0 x 6.7 cm
This tree-like mineral group features an uncommon association of dioptase and malachite. Sparkling emerald green microcrystals of dioptase cover a white layer of calcite. Ornaments in the form of malachite balls (up to 1.0 cm) are scattered around the dioptase.

Epidote
Rob Lavinsky photo, iRocks.com, - CC_BY_SA-3.0, via Wikimedia Commons
Green Monster Mountain, Prince of Wales Island, Alaska
7.0 x 5.2 x 1.7 cm
This fan-shaped aggregate of prismatic epidote crystals represents an atypical occurrence from this well-known, but remote locality. Note that the image has been rotated 180 degrees to highlight the tree shape.

Erythrite and Skutterudite
Rob Lavinsky photo, iRocks.com, - CC_BY_SA-3.0, via Wikimedia Commons
Bou Azzer East deposit, Bou Azzer, Tazenakht, Ouarzazate Province, Morocco
5.7 x 3.7 x 3.0 cm
Deep purple rosette clusters of erythrite crystals mixed with tiny skutterudite crystals make up this tree-like group of cobalt minerals.

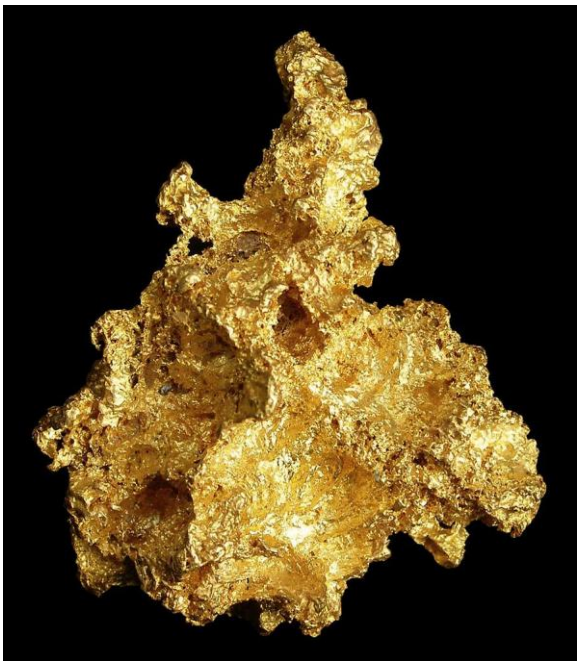
Fluorite
Rob Lavinsky photo, iRocks.com, - CC_BY_SA-3.0, via Wikimedia Commons
Hilton Mine, Scordale, Cambria, England
9.8 x 8.0 x 6.1 cm, crystals up to 1.75 cm across
This fluorite tree specimen features several penetrating twin crystals. The yellow color is unusual compared to the green and purple fluorites typically found at other English localities.



Fluorite var. Chlorophane
Modris Baum photo, - PD, via Wikimedia Commons
Buckwheat dump, Franklin, Sussex County, New Jersey
7 x 7 x 7 cm
Images captured under white and shortwave ultraviolet light
Chlorophane is an uncommon variety of fluorite which is fluorescent, phosphorescent, thermoluminescent, and triboluminescent. This unusual combination of properties has been attributed to the presence of different rare-element impurities, such as terbium, holmium, erbium, and yttrium, but specific activators remain unknown.

Galena and Sphalerite
Rob Lavinsky photo, iRocks.com, - CC_BY_SA-3.0, via Wikimedia Commons
Joplin Field, Tri-State District, Jasper County, Missouri
12.0 x 8.7 x 4.7 cm, galena cubes up to 1.7 cm across
This tree-like specimen is made up of intergrown galena cubes on a “trunk” of silicified limestone.

Gypsum
Rob Lavinsky photo, iRocks.com, - CC_BY_SA-3.0, via Wikimedia Commons
Sinclairs Gap Lake, Middleback Range, Eyre peninsula, South Australia, Australia
10.8 x 9.8 x 6.0 cm
The herringbone-shaped crystal cluster of this evaporite gypsum also suggests a Christmas tree form. The bladed crystals are up to 6.7 cm in length and are accented by tiny second generation crystals.



Gold
Rob Lavinsky photo, iRocks.com, - CC_BY_SA-3.0, via Wikimedia Commons
Bendigo, Victoria, Australia
5.6 x 4.4 x 2.5 cm, 130 g (4.25 troy ounces)
This tree-shaped gold nugget features jagged surfaces with complex, minute crystallization.

Inesite and Prehnite
Rob Lavinsky photo, iRocks.com, - CC_BY_SA-3.0, via Wikimedia Commons
N'Chwaning II Mine, Kuruman, Kalahari manganese fields, Northern Cape Province, South Africa
5.1 x 3.5 x 2.8 cm
This specimen features a tree-shaped cluster of rich red inesite crystals on a base of orange prehnite.

A spray of malachite needles on top of a base of shattuckite and quartz creates an impression of a slim profile Christmas tree.

Malachite, Shattuckite, and Quartz
Rob Lavinsky photo, iRocks.com, - CC_BY_SA-3.0, via Wikimedia Commons
Kaokoveld Mine, Kunene Region, Namibia
8 x 3.2 x 2.8 cm, malachite spray is 7.3 cm long

Pentagonite with Heulandite
Rob Lavinsky photo, iRocks.com, - CC_BY_SA-3.0, via Wikimedia Commons
Wagholi Quarry, Pune (Poonah) District, Maharashtra, India
6.3 x 3.7 x 2.3 cm, crystal cluster 1.7 cm in length
Pentagonite is a rare silicate mineral that is a dimorph of cavansite. It is named for the unusual twinning habit which involves five-fold symmetry. This rich neon-blue cluster occurs in a vug of heulandite crystals. Note that the specimen photo has been rotated to provide a more tree-like orientation.

Platinum
Rob Lavinsky photo, iRocks.com, - CC_BY_SA-3.0, via Wikimedia Commons
Fox Gulch, Goodnews Bay, Bethel Borough, Alaska
1.4 x 0.8 x 0.8 cm, 15.76 carats
This platinum nugget consists of a number of crude tiny, hoppered cubic crystals which suggest a tree with a bent trunk.

Pyrolusite
Rob Lavinsky photo, iRocks.com, - CC_BY_SA-3.0, via Wikimedia Commons
Gremmelsbach, Triberg, Baden-Württenberg, Germany
6.9 x 6.7 x 5.0 cm
Intersecting radiating sprays of pyrolusite create this showy tree-like specimen. The sample was found in the Gremmelsbach area of Germany's Black Forest which is renowned for pyrolusite specimens.

Rhodochrosite
Eric Polk photo, Natural History Museum of Los Angeles County specimen, - CC_BY_SA-4.0 International, via Wikimedia Commons
N'Chwaning? Mine, Kuruman, Northern Cape Province, South Africa
This gemmy cluster of scalenohedral rhodochrosite crystals conveys the impression of a tree tilting backwards.

Silver, Acanthite, and Calcite
Rob Lavinsky photo, iRocks.com, - CC_BY_SA-3.0, via Wikimedia Commons
Balcoli Mine, Falset, Priorat, Tarragona, Catalonia, Spain
6.2 x 3.1 x 2.4 cm, spinel twins up to 0.75 cm in length

Delicate spinel twins silver crystals surround a core of white calcite and black acanthite to form this tree-like specimen.

Silver with Copper
James St. John photo, A. E. Seaman Mineral Museum specimen, - CC_BY_SA-2.0, via Wikimedia Commons
Cliff Mine, Keweenaw County, Michigan
9.5 x 10.5 cm
Thick dendritic silver crystals create the impression of branches of this tree-like specimen. Native silver and copper are intimately associated in the Keweenaw copper deposits.

Smithsonite
Rob Lavinsky photo, iRocks.com, - CC_BY_SA-3.0, via Wikimedia Commons
Kelly Mine, Magdalena District, Socorro County, New Mexico
9.3 x 7.5 x 4.8 cm
A cluster of blue-green botryoidal smithsonite creates this tree-like form.

Sphalerite
Rob Lavinsky photo, iRocks.com, - CC_BY_SA-3.0, via Wikimedia Commons
Idarado Mine, Telluride, San Miguel County, Colorado
9.6 x 6.8 x 3.2 cm
This tree-like shape is comprised of sharp jet black octahedral crystals of sphalerite.

Spinel
Rob Lavinsky photo, iRocks.com, - CC_BY_SA-3.0, via Wikimedia Commons
Luc Yen, Yenbai Province, Vietnam
3.4 x 3.3 x 3.1cm
This group of hoppered spinel crystals forms a bright gemmy tree-like shape.

Sulphur
Rob Lavinsky photo, iRocks.com, - CC_BY_SA-3.0, via Wikimedia Commons
Napa, Potosi Department, Bolivia
2.8 x 2.2 x 1.9 cm
This bright tree-like sulfphur specimen consists of sharp, colorful terminated crystals.

Tennantite
Rob Lavinsky photo, iRocks.com, - CC_BY_SA-3.0, via Wikimedia Commons
Tsumeb Mine, Tsumeb, Namibia
4.6 x 4.4 x 4.1 cm
This tree-like shape is made up of a single crystal of tennantite. The iridescent highlights may be due to a surface coating of bornite.

Torbernite
Rob Lavinsky photo, iRocks.com, - CC_BY_SA-3.0, via Wikimedia Commons
Margabal Mine, Entraygues-sur-Truyêtr, Averyon, Midi-Pyrénées, France

3.0 x 3.0 x 2.0 cm
This tree-like torbernite, which is from a classic French locality, consists of stacked forest green, tetragonal crystals.

Vanadinite
Rob Lavinsky photo, iRocks.com, - CC_BY_SA-3.0, via Wikimedia Commons
Mibladene, Midelt, Khénifra Province, Morocco
12.4 x 9.5 x 6.8 cm, crystals up to 1.1 cm across
Lustrous, hexagonal vanadinite crystals decorate this tree-like specimen

Summary

Hope you have enjoyed this somewhat fanciful look at minerals resembling Christmas trees. Best wishes for a wonderful Christmas or whatever holiday you may be celebrating this season!

Wulfenite on Mimetite
Rob Lavinsky photo, iRocks.com, - CC_BY_SA-3.0, via Wikimedia Commons
Ojuela Mine, Mapimi, Municipio de Mapimi, Durango, Mexico
8.6 x 4.4 x 3.8 cm, crystals up to 8 mm
This specimen presents the appearance of a slim profile tree with blocky wulfenite crystals on contrasting mimetite.

References:

KellerLynn, K. (2009) Wind Cave National Park Geologic Resources Inventory Report. Natural Resource Report NPS/NRPC/GRD/NRR—2009/087. National Park Service, Denver, Colorado. 48 p.

Zeller, A. (2005) “Stories of three Christmases in Prescott rekindle memories”, *sharlothallmuseum.org*, December 10, 2005. https://la.sharlothallmuseum.org/index.php/blog/stories-of-three-christmases.

◊ ◊ ◊

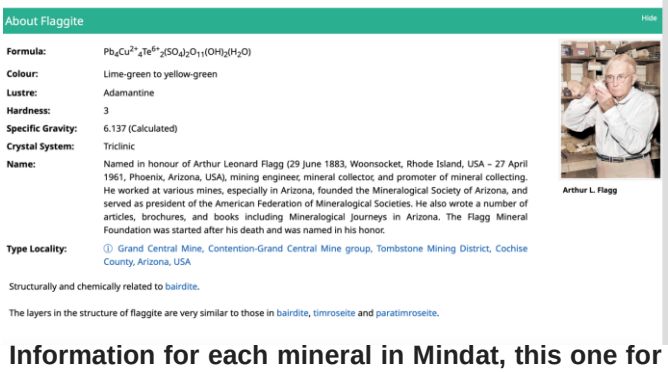
Arizona Rocks 139

Text by Ray Grant (photos from Mindat.org website)

If you are interested in minerals, Mindat.org is the most amazing website. It has descriptions of 6,105 mineral species, 3,155 rock names, 407,878 mineral localities, and 1,396,768 photographs. How long will it take to look at over a million photographs? These numbers increase almost daily. There are also articles, a glossary, discussions, and more.

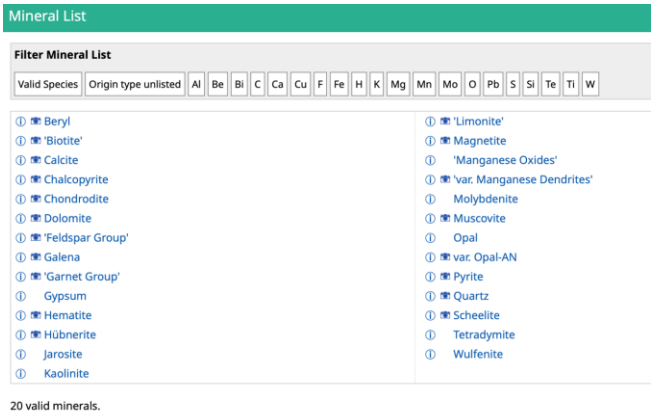
For Arizona there are about 476 localities described, for most there is the latitude and longitude, the geology of the area, a list of minerals found there and additional information. See information for an Arizona locality, Tungsten King Mine. I have not been there just a random pick. Also included is a mineral description for flaggite, named after Arthur Flagg.

There also is a list of mineral museums from all over the world. The list has 544 museums. The list for Arizona needs to be updated, but at least it is a starting point if you are traveling and want to visit mineral museums.

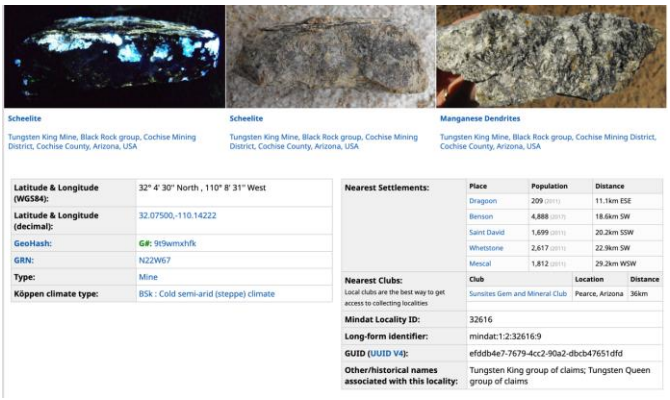


Information for each mineral in Mindat, this one for Flaggite

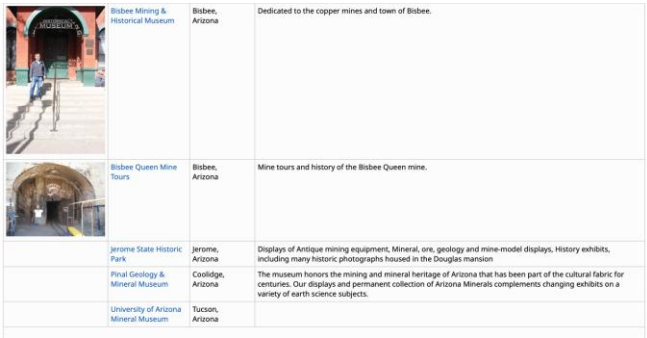
Map in Mindat showing location of Tungsten King Mine



List of minerals in Mindat for tungsten King Mine



Location information in Mindat for Tungsten King Mine and some photographs for specimens found there



Arizona Mineral Museums in Mindat

Pinal Museum and Society News

351 N. Arizona Blvd., Coolidge, AZ

Pinal Geology and Mineral Society next meeting

January 15, 2025

Meetings are the third Wednesday at 7pm, doors open at 6:00

www.pinalgeologymuseum.org

Ray Grant ray@pinalgeologymuseum.org

Pinal Geology and Mineral Museum
September – May hours are Wednesday – Saturday from 10-4, admission is free.
Groups can arrange special visits please call 520-723-3009.

One of our future projects is a "Walk through Time": If you are an artist, art or geology student, or just willing to help, we are planning on a walk through time as murals on the front side of the building.

There will be five panels, a total of 150 feet; old Precambrian, young Precambrian, Paleozoic, Mesozoic and Cenozoic panels, 4.6 billion years of earth history. They will show highlights of each period especially the fossils found. Currently, the drawings for each are being made, so if you are interested contact the museum by email, phone, or visit to be on a list of interested helpers and we will contact you when the work is ready to start. If you have questions email Katherine Roxlo at katherine@roxlo.com.

Side of Chamber of Commerce/Museum building where the walk will be painted

Sun City Rockhound Mineral Museum
Sundial Recreation Center
14801 N. 103RD Ave.
Sun City, AZ 85351
scrockmuseum@gmail.com
623-428-6442

The museum does offer private party tours. Clubs and private individuals interested can contact the museum at scrockmuseum@gmail.com.

C. Sandoval photo

Winter Hours
October – April
10 am to 1 pm
Closed Thurs., & Sunday
Summer Hours
May-September 10am-1pm
Saturdays only

Sun City Rockhound Club and Mineral Museum

By Carol Bankert-George Vice President

The club members are gearing up for participation in the 2025 Flagg Gem & Mineral Show at Mesa Community College, NE corner of US 60 and Dobson Road in Mesa, January 3-5, 2025 from 9-5. The club will have a booth on Saturday and Sunday the 4th and 5th. We will again be offering minerals in an egg carton for young and old alike. Please stop by and visit with us!

Our member volunteers at our 2024 booth

Visitors choosing their favorite specimens at our January 2024 booth

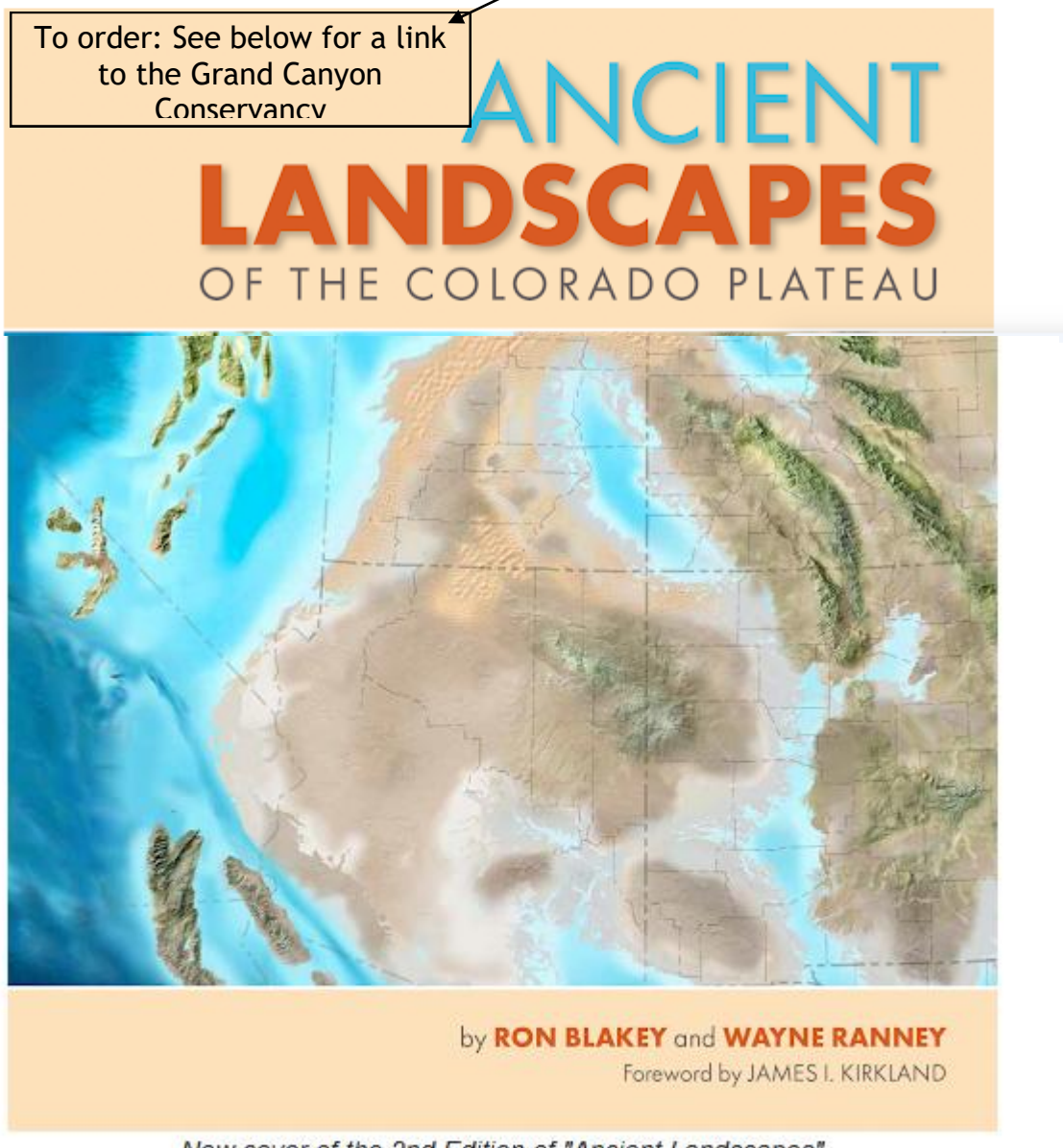
Our member volunteers at our 2024 booth

A Fully Revised 2nd Edition of "Ancient Landscapes of the Colorado Plateau"

Nov 15, 2024 09:05 pm

"***Ancient Landscapes of the Colorado Plateau***", first published in 2008, is now available in a fully revised and completely updated 2nd Edition! Published by the Grand Canyon Conservancy, it is being featured as a special Holiday offering here. The book will make a fantastic gift for your Earth-minded friends and family! (I recommend buying directly from here as proceeds go to support Grand Canyon National Park.

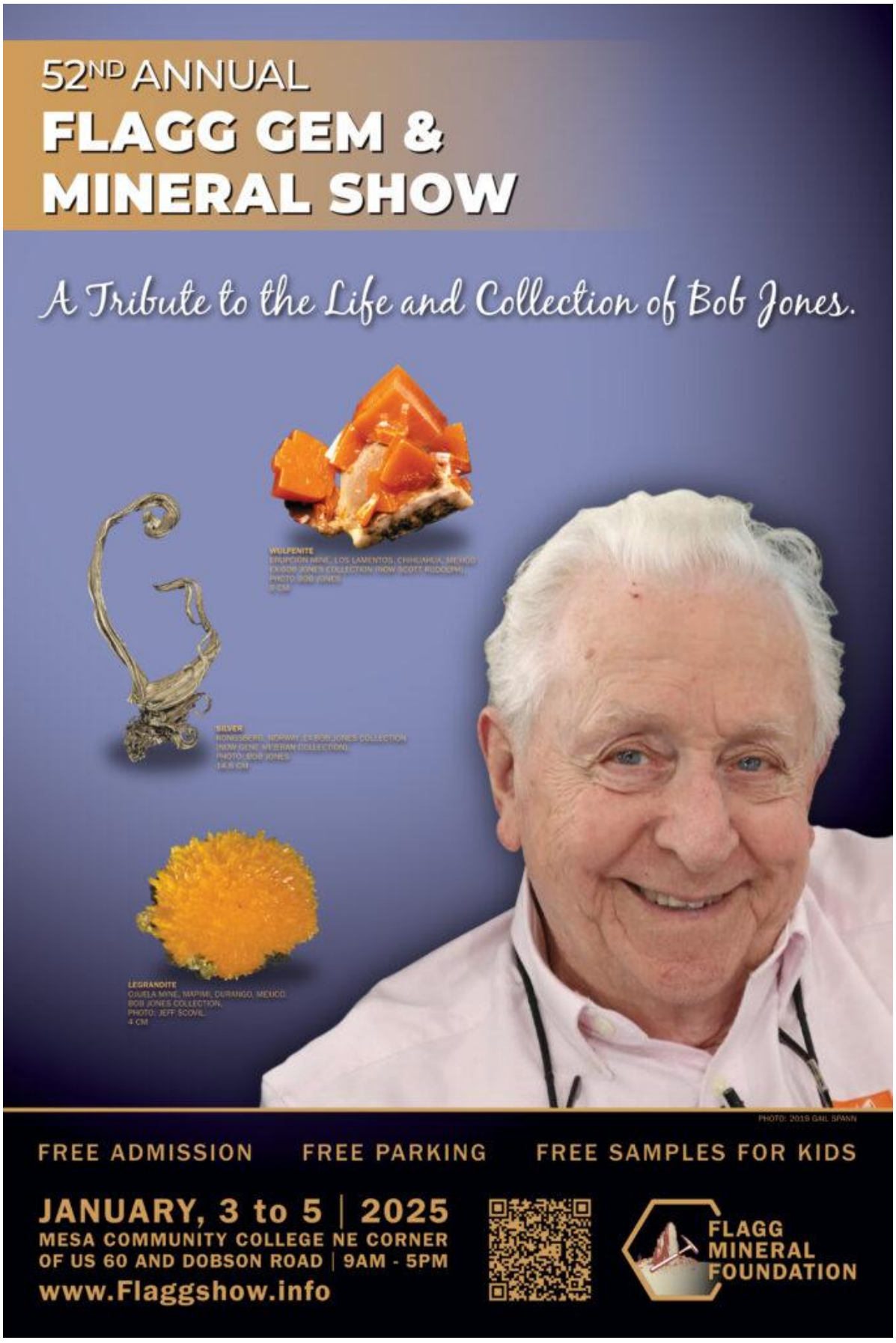
To order: See below for a link to the Grand Canyon Conservancy



New cover of the 2nd Edition of "Ancient Landscapes"

https://www.grandcanyon.org/products/ancient-landscapes-of-the-colorado-plateau

Arizona Rock and Gem Shows

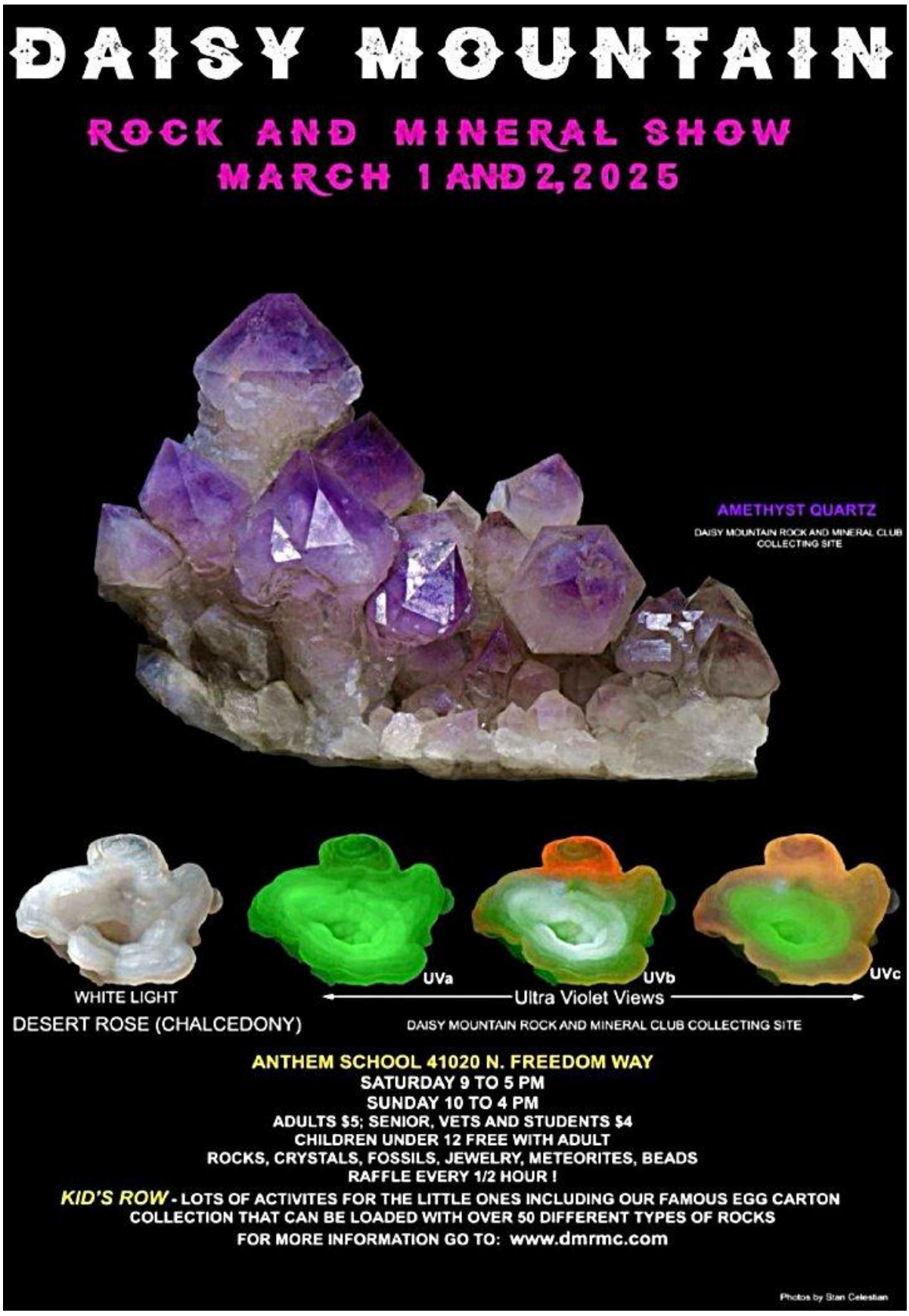


Arizona Rock and Gem Shows

Gila County Gem & Mineral Show
January 12 — 14, 2025
Friday and Saturday 9 — 5
Sunday 10 — 4
Gila County Fair Grounds
900 E. Fairgrounds Rd.
Globe, AZ
http://www.gilagem.org/

Arizona Rock and Gem Shows

Arizona Rock and Gem Shows



Apache Junction Rock & Gem Club
Meetings are on the 2nd Thursday
Next Meeting: January 9, 2025, 6:30 pm
www.ajrockclub.com
@ Club Lapidary Shop
2151 W. Superstition Blvd., Apache Jct.

Daisy Mountain Rock & Mineral Club
Meetings are on the 1st Tuesday
(unless a Holiday then 2nd Tuesday)
Next Meeting: January 7, 2025, 6:30 p.m.
www.dmrmc.com
@ Anthem Civic Building
3701 W. Anthem Way, Anthem, AZ

Maricopa Lapidary Society, Inc
Meetings are on the 3rd Tuesday
Next Meeting: January 21, 2025, 7:00 pm
www.maricopalapidarysociety.com
@ North Mountain Visitor Center
12950 N. 7th St., Phoenix, AZ

Mineralogical Society of Arizona
Meetings are on the 3rd Thursday
(Except December & June)
January 16, 2025
@ Franciscan Renewal Center, Piper Hall
5802 E. Lincoln Drive, Scottsdale, AZ
www.msaaz.org

Pinal Geology & Mineral Society
Meetings are on the 3rd Wednesday
Next Meeting: January 15, 2025, 7:00 pm
www.pinalgeologymuseum.org
351 N. Arizona Blvd., Coolidge

West Valley Rock & Mineral Club
Meetings are on the 2nd Tuesday
Next Meeting: January 14, 2025, 6:30 pm
www.westvalleyrockandmineralclub.com
Buckeye Community Veterans Service Center
402 E. Narramore Avenue, Buckeye, AZ

Gila County Gem & Mineral Society
Meetings are on the 1st Thursday
(unless a Holiday then the next Thursday)
Next Meeting January 2, 2025, 6:30 pm
www.gilagem.org
Club Building
413 Live Oak St, Miami, AZ

Wickenburg Gem & Mineral Society
Meetings are on the 2nd Friday
(February & December on the 1st Friday)
Next Meeting: January 10, 2025, 7:00 pm
www.wickenburggms.org
@ Coffinger Park Banquet Room
175 E. Swilling St., Wickenburg, AZ

ESM's Meeting Notice

ESM's next meeting will be at North Mountain Visitor Center, 12950 N. 7th St., Phoenix, on Tuesday, TBA 2025, at 6:30 p.m.

BECOME A MEMBER!

Join the Earth Science Museum's

esi: Earth Science Investigation team

IS IT TIME TO RENEW YOUR MEMBERSHIP?
Please renew today! ☺☺☺

_ _ _ _ _ _ _ _ cut here _ _ _ _ _ _ _ _ _

ESM Earth Science Investigation Team Membership Form

_____ New Member _____ Renewal

Membership levels:

_____ ESI Family $20

_____ ESI Individual $10

Membership benefits:

- Monthly e-newsletter *Earthquake*
- Official team membership card
- Knowledge that your contribution is making a difference in earth science education.

MANY THANKS TO OUR MAJOR DONORS!

AZ Leaverite Rock & Gem Society

Flagg Mineral Foundation
www.flaggmineralfoundation.org

Friends of the AZ Mining & Mineral Museum

Maricopa Lapidary Society
http://maricopalapidarysociety.com/

Mineralogical Society of AZ
www.msaaz.org

Payson Rimstones Rock Club
https://www.rimstonesrockclub.org/

Sossaman Middle School

White Mountain Gem & Mineral Club
www.whitemountain-azrockclub.org

Sun City Rockhound Club & Mineral Museum
https://suncityaz.org/recreation/clubs/rockhound-club-mineral-museums/

Wickenburg Gem & Mineral Society
http://www.wickenburggms.org
www.facebook.com/pages/Wickenburg-Gem-and-Mineral-Society/111216602326438

West Valley Rock and Mineral Club
http://www.westvalleyrockandmineralclub.com/

Staples Foundation
www.staplesfoundation.org

Anita Aiston	Will & Carol McDonald
Peter & Judy Ambelang	Debbie Michalowski
Stan & Susan Celestian	Janet Stoeppelmann
Russ Hart	Dennis & Georgia Zeutenhorst

_ _ _ _ _ _ _ _ cut here _ _ _ _ _ _ _ _ _

Name: _____

Address: _____

City, State, Zip: _____

Email: _____

Phone Number: _____

Mail form & payment to: Earth Science Museum
3215 W. Bethany Home Rd., Phoenix, AZ 85017

For Office Use Only

Card given/mailed: _____

Database updated: ☐ Distribution Lists updated: ☐

Card ID # _____ Expires: _____

Earth Science Museum
3215 W. Bethany Home Rd.
Phoenix, AZ 85017

Phone:
602-973-4291

Editor E-Mail:
scote@earthsciencemuseum.org

We're on the Web!

Visit us at:

www.earthsciencemuseum.org

Mission
Our Mission is to excite and inspire all generations about earth sciences through educational outreach.

Vision
We envision a community where students and the general public have curiosity about, passion for, and understanding of the underlying principles of earth sciences.

For more information about the ESM, how to become a member or how to arrange for a school visit or Community function, go to: www.earthsciencemuseum.org.

NOTICE:
ESM's next meeting will be at North Mountain Visitor Center, 12950 N 7th St, Phoenix, on Tuesday, TBA 2025, at 6:30 p.m.

THANK YOU FOR YOUR CONTINUING INTEREST & SUPPORT!!!

Earth Science Museum
3215 W. Bethany Home Rd.
Phoenix, AZ 85017