



# 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](http://www.earthsciencemuseum.org), [scote@earthsciencemuseum.org](mailto: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 16<sup>th</sup> 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 19<sup>th</sup> 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

Antetetzambalo (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.



Diopside with Malachite



Rob Lavinsky photo, iRocks.com, - CC\_BY\_SA-3.0,  
via Wikimedia Commons

Tsumeb Mine, Tsumeb, Namibia

12.0 x 11.0 x 6.7 cm

This tree-like mineral group features an uncommon association of diopside and malachite. Sparkling emerald green microcrystals of diopside cover a white layer of calcite. Ornaments in the form of malachite balls (up to 1.0 cm) are scattered around the diopside.



### 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.





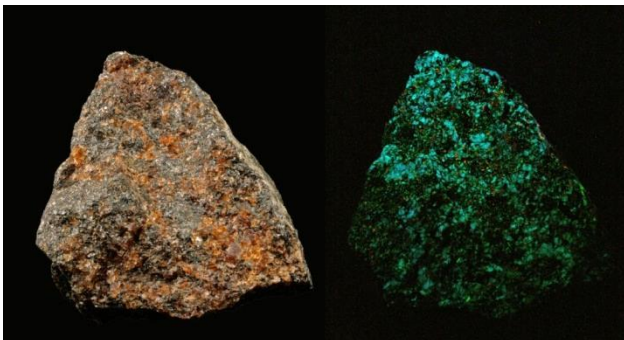
### Fluorite

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

Sinclair's 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 cavanite. 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, hopped 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-Württemberg, 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 sulphur specimen  
consists of sharp, colorful terminated  
crystals.



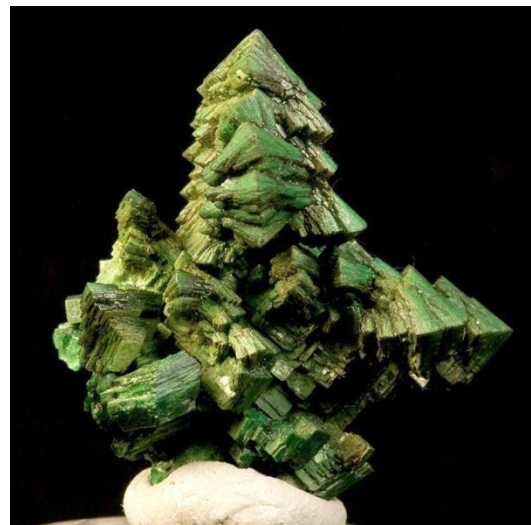
### Tennantite

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,  
Aveyron, 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.

### About Flaggite

**Formula:**  $Pb_2Cu^{2+}_2Te^{4+}_2(SO_4)_2O_{11}(OH)_2(H_2O)$

**Colour:** Lime-green to yellow-green

**Lustre:** Adamantine

**Hardness:** 3

**Specific Gravity:** 6.137 (Calculated)

**Crystal System:** Triclinic

**Name:** Named in honour of Arthur Leonard Flagg (29 June 1883, Woonsocket, Rhode Island, USA - 27 April 1961, Phoenix, Arizona, USA), mining engineer, mineral collector and promoter of mineral collecting. He worked at various mines, especially in Arizona, founded the Mineralogical Society of Arizona, and served as president of the American Federation of Mineralogical Societies. He also wrote a number of articles, brochures, and books including *Mineralogical Journeys in Arizona*. The Flagg Mineral Foundation was started after his death and was named in his honor.

**Type Locality:** ① Grand Central Mine, Contention-Grand Central Mine group, Tombstone Mining District, Cochise County, Arizona, USA

Structurally and chemically related to [bairdite](#).

The layers in the structure of flaggite are very similar to those in [bairdite](#), [timroseite](#) and [paratimroseite](#).

Arthur L. Flagg

Information for each mineral in Mindat, this one for Flaggite

## Arizona Mineral Museums in Mindat

Tungsten King Mine, Black Rock group, Cochise Mining District, Cochise County, Arizona, USA

This page is currently not sponsored. Click here to sponsor this page.



## Map in Mindat showing location of Tungsten King Mine

### Mineral List

Filter Mineral List

Valid Species | Origin type unlisted | Al | Be | Bi | C | Ca | Cu | F | Fe | H | K | Mg | Mn | Mo | O | Pb | S | Si | Te | Ti | W

- ① Beryl
- ① Biotite
- ① Calcite
- ① Chalcocopyrite
- ① Chondrodite
- ① Dolomite
- ① Feldspar Group
- ① Galena
- ① Garnet Group
- ① Gypsum
- ① Hematite
- ① Hübnerite
- ① Jarosite
- ① Kaolinite
- ① Limonite
- ① Magnetite
- ① Manganese Oxides
- ① var. Manganese Dendrites
- ① Molybdenite
- ① Muscovite
- ① Opal
- ① var. Opal-AN
- ① Pyrite
- ① Quartz
- ① Scheelite
- ① Tetradymite
- ① Wulfenite

20 valid minerals.

## List of minerals in Mindat for tungsten King Mine

Scheelite

Tungsten King Mine, Black Rock group, Cochise Mining District, Cochise County, Arizona, USA

Scheelite

Tungsten King Mine, Black Rock group, Cochise Mining District, Cochise County, Arizona, USA

Manganese Dendrites

Tungsten King Mine, Black Rock group, Cochise Mining District, Cochise County, Arizona, USA

<b>Latitude &amp; Longitude (WGS84):</b>	32° 4' 30" North, 110° 8' 31" West	<b>Nearest Settlements:</b>	<b>Place</b>	<b>Population</b>	<b>Distance</b>
<b>Latitude &amp; Longitude (decimal):</b>	32.07500, -110.14222		Dragoon	209 (2011)	11.1km ESE
<b>GeoHash:</b>	6F, 9F9wmxhfk		Benson	4,888 (2011)	18.6km SW
<b>GRN:</b>	N22ZW67		Saint David	1,699 (2011)	20.2km SW
<b>Type:</b>	Mine		Whetstone	2,617 (2011)	22.9km SW
<b>Köppen climate type:</b>	BSk - Cold semi-arid (steppe) climate		Mescal	1,812 (2011)	29.2km WSW

<b>Nearest Clubs:</b>	<b>Club</b>	<b>Location</b>	<b>Distance</b>
Local clubs are the best way to get access to collecting localities.	Sunshine Gem and Mineral Club	Pearce, Arizona	36km
<b>Mindat Locality ID:</b>	32616		
<b>Long-form Identifier:</b>	mindat:1:2:32616:9		
<b>GUID (UUID V4):</b>	efdb4e7-7679-4cc2-90a2-dbc847651dfd		
<b>Other/historical names associated with this locality:</b>	Tungsten King group of claims; Tungsten Queen group of claims		

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

	Bisbee Mining & Historical Museum Bisbee, Arizona	Dedicated to the copper mines and town of Bisbee.
	Bisbee Queen Mine Tours Bisbee, Arizona	Mine tours and history of the Bisbee Queen mine.
	Jerome State Historic Park Jerome, Arizona	Displays of Antique mining equipment, Mineral, ore, geology and mine-model displays, History exhibits, including many historic photographs housed in the Douglas mansion
	Pinal Geology & Mineral Museum Coolidge, Arizona	The museum honors the mining and mineral heritage of Arizona that has been part of the cultural fabric for centuries. Our displays and permanent collection of Arizona Minerals complements changing exhibits on a variety of earth science subjects.
	University of Arizona Mineral Museum Tucson, Arizona	





## Pinal Geology & Mineral Museum

### 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](http://www.pinalgeologymuseum.org)

Ray Grant [ray@pinalgeologymuseum.org](mailto: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](mailto: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. 103<sup>RD</sup> 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.**

### **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**



**C. Sandoval photo**

**WINTER HOURS  
OCTOBER – APRIL  
10 AM TO 1 PM  
CLOSED THURS., & SUNDAY  
SUMMER HOURS  
MAY–SEPTEMBER 10AM–1PM  
SATURDAYS ONLY**



**Visitors choosing their favorite specimens at our January 2024 booth**



**Our member volunteers at our 2024 booth**

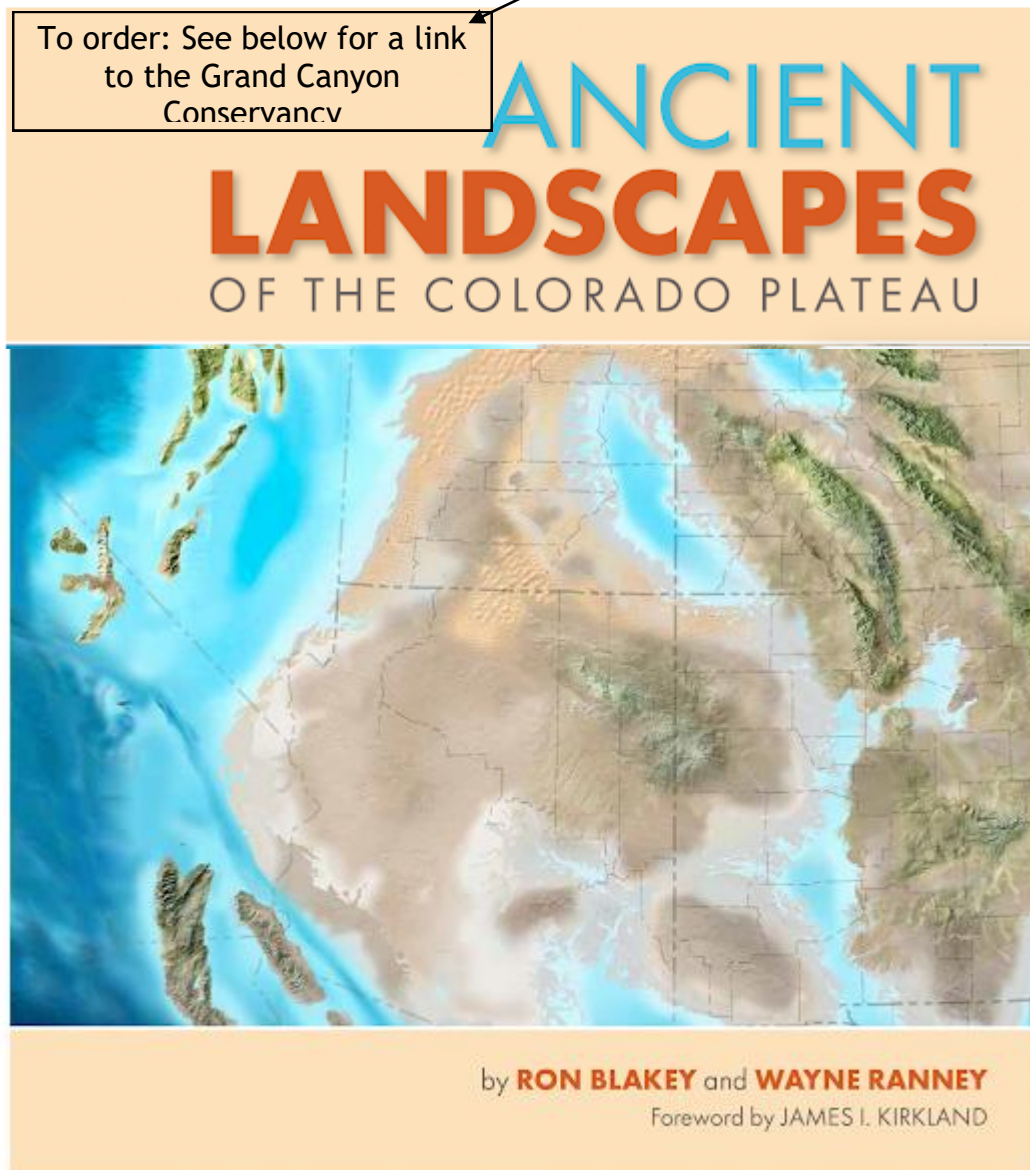


## [A Fully Revised 2nd Edition of "Ancient Landscapes of the Colorado Plateau"](#)

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

### 52<sup>ND</sup> ANNUAL **FLAGG GEM & MINERAL SHOW**

*A Tribute to the Life and Collection of Bob Jones.*



**SILVER**  
MONOSODITE, MICHIGAN, EX-BOB JONES COLLECTION  
NOW GENE MISTRAW COLLECTION  
PHOTO: BOB JONES  
1.5 CM



**WILFEMITE**  
SARAFON MINE, LOS LAMENTOS, CHIHUAHUA, MEXICO  
EX-BOB JONES COLLECTION (FROM SCOTT KROODEN)  
PHOTO: BOB JONES  
8 CM



**LEGRANDITE**  
GAUELA MINE, MAPIME, DURANGO, MEXICO  
BOB JONES COLLECTION  
PHOTO: JEFF SCOVIL  
4 CM



PHOTO: 2019 GAIL SPANN

**FREE ADMISSION**

**FREE PARKING**

**FREE SAMPLES FOR KIDS**

**JANUARY, 3 to 5 | 2025**  
MESA COMMUNITY COLLEGE NE CORNER  
OF US 60 AND DOBSON ROAD | 9AM - 5PM  
[www.Flaggshow.info](http://www.Flaggshow.info)



**FLAGG  
MINERAL  
FOUNDATION**



## 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/>

## Clarkdale Rocks Gem & Mineral Show "54th Show"

### Show & Sale



**February 21-23, 2025**

**Clark Memorial Clubhouse Auditorium**  
**19 N. Ninth Street, Clarkdale, AZ 86324**  
**FRI & SAT 9am – 5pm, SUN 9am – 4pm**

**Free Admission**

**Mingus Gem & Mineral Club**  
[mingusgem.club](http://mingusgem.club)



**Crystals • Minerals • Gems • Jewelry • Fossils**  
**Cabochons • Findings • Rock Slabs**  
**Geode Splitting • Daily Raffles**  
**Jr. Rockhound Room Activities**  
**and much more!**

The Tucson Gem and Mineral Society Proudly Presents:

**THE 70<sup>TH</sup> ANNUAL  
 TUCSON GEM & MINERAL SHOW®**



**FEBRUARY 13 - 16, 2025**  
**TUCSON CONVENTION CENTER**

for more information, visit: [www.tgms.org](http://www.tgms.org)



Scan code for information on our Tucson Gem & Mineral Show®





## Arizona Rock and Gem Shows

The Tucson Gem and Mineral Society Proudly Presents:

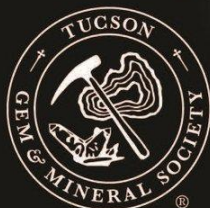
THE 70<sup>TH</sup> ANNUAL  
TUCSON GEM & MINERAL SHOW®

SHADES OF GREEN  
Experience the Magic!

Emerald, 6.4cm high. Boyaca, Colombia, Scott Rudolph. Photo: Jeff Scovil

FEBRUARY 13 - 16, 2025  
TUCSON CONVENTION CENTER

for more information, visit: [www.tgms.org](http://www.tgms.org)



Scan code for information on our Tucson Gem & Mineral Show®





## Arizona Rock and Gem Shows

# DAISY MOUNTAIN

## ROCK AND MINERAL SHOW

### MARCH 1 AND 2, 2025



**AMETHYST QUARTZ**  
DAISY MOUNTAIN ROCK AND MINERAL CLUB  
COLLECTING SITE



WHITE LIGHT  
DESERT ROSE (CHALCEDONY)

UVa UVb UVc  
Ultra Violet Views

DAISY MOUNTAIN ROCK AND MINERAL CLUB COLLECTING SITE

**ANTHEM SCHOOL 41020 N. FREEDOM WAY**  
SATURDAY 9 TO 5 PM  
SUNDAY 10 TO 4 PM  
ADULTS \$5; SENIOR, VETS AND STUDENTS \$4  
CHILDREN UNDER 12 FREE WITH ADULT  
ROCKS, CRYSTALS, FOSSILS, JEWELRY, METEORITES, BEADS  
RAFFLE EVERY 1/2 HOUR !

**KID'S ROW** - LOTS OF ACTIVITIES FOR THE LITTLE ONES INCLUDING OUR FAMOUS EGG CARTON  
COLLECTION THAT CAN BE LOADED WITH OVER 50 DIFFERENT TYPES OF ROCKS  
FOR MORE INFORMATION GO TO: [www.dmrmc.com](http://www.dmrmc.com)

Photos by Stan Celestian



### Apache Junction Rock & Gem Club

Meetings are on the 2<sup>nd</sup> Thursday  
 Next Meeting: January 9, 2025, 6:30 pm  
[www.ajrockclub.com](http://www.ajrockclub.com)  
 @ Club Lapidary Shop  
 2151 W. Superstition Blvd., Apache Jct.



### Daisy Mountain Rock & Mineral Club

Meetings are on the 1<sup>st</sup> Tuesday  
 (unless a Holiday then 2<sup>nd</sup> Tuesday)  
 Next Meeting: January 7, 2025, 6:30 p.m.  
[www.dmrmc.com](http://www.dmrmc.com)  
 @ Anthem Civic Building  
 3701 W. Anthem Way, Anthem, AZ



### Maricopa Lapidary Society, Inc

Meetings are on the 3<sup>rd</sup> Tuesday  
 Next Meeting: January 21, 2025, 7:00 pm  
[www.maricopalapidarysociety.com](http://www.maricopalapidarysociety.com)  
 @ North Mountain Visitor Center  
 12950 N. 7<sup>th</sup> St., Phoenix, AZ



### Mineralogical Society of Arizona

Meetings are on the 3<sup>rd</sup> Thursday  
 (Except December & June)  
 January 16, 2025  
 @ Franciscan Renewal Center, Piper Hall  
 5802 E. Lincoln Drive, Scottsdale, AZ  
[www.msaaz.org](http://www.msaaz.org)



### Pinal Geology & Mineral Society

Meetings are on the 3<sup>rd</sup> Wednesday  
 Next Meeting: January 15, 2025, 7:00 pm  
[www.pinalgeologymuseum.org](http://www.pinalgeologymuseum.org)  
 351 N. Arizona Blvd., Coolidge



### West Valley Rock & Mineral Club

Meetings are on the 2<sup>nd</sup> Tuesday  
 Next Meeting: January 14, 2025, 6:30 pm  
[www.westvalleyrockandmineralclub.com](http://www.westvalleyrockandmineralclub.com)  
 Buckeye Community Veterans Service Center  
 402 E. Narramore Avenue, Buckeye, AZ



### Gila County Gem & Mineral Society

Meetings are on the 1<sup>st</sup> Thursday  
 (unless a Holiday then the next Thursday)  
 Next Meeting January 2, 2025, 6:30 pm  
[www.gilagem.org](http://www.gilagem.org)  
 Club Building  
 413 Live Oak St, Miami, AZ



### Wickenburg Gem & Mineral Society

Meetings are on the 2<sup>nd</sup> Friday  
 (February & December on the 1<sup>st</sup> Friday)  
 Next Meeting: January 10, 2025, 7:00 pm  
[www.wickenburggms.org](http://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. 7<sup>th</sup> St., Phoenix, on Tuesday, TBA 2025, at 6:30 p.m.

**BECOME A MEMBER!**  
Join the Earth Science Museum's



**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](http://www.flaggmineralfoundation.org)

Friends of the AZ Mining & Mineral Museum

Maricopa Lapidary Society

<http://maricopalapidarysociety.com/>

Mineralogical Society of AZ

[www.msaaaz.org](http://www.msaaaz.org)

Payson Rimstones Rock Club

<https://www.rimstonesrockclub.org/>

Sossaman Middle School

White Mountain Gem & Mineral Club

[www.whitemountain-azrockclub.org](http://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](https://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](http://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](http://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](http://www.earthsciencemuseum.org).

**NOTICE:**

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

**THANK YOU FOR YOUR CONTINUING INTEREST & SUPPORT!!!**

**EARTH SCIENCE MUSEUM  
NON-PROFIT BOARD OF DIRECTORS**

Harvey Jong	President
Mardy Zimmermann	VP Outreach
Shirley Coté	Secretary/ Treasurer

Cindy Buckner, Doug Duffy, Ray Grant,  
Bob Holmes, Chris Whitney-Smith

**Earth Science Museum**

3215 W. Bethany Home Rd.  
Phoenix, AZ 85017

