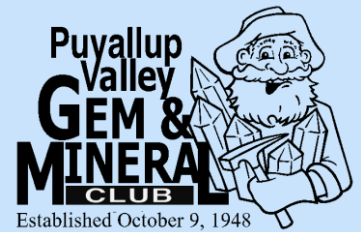


ROCK-A-TEER



Newsletter of the Puyallup Valley Gem & Mineral Club

Jillian Higgins

Issue 55

Volume 108

August

2022

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August is the second busiest month for the club. We have our Overnight Field Trip with world famous camp spaghetti and breakfast Saturday, August 6th and Sunday August 7th. At the same time the Siperek's are having their annual sale at the clubhouse Wednesday, August 3rd through Sunday, August 7th.

We have the Show in the Trees Friday, August 19th through Sunday, August 21st at the Tacoma Sportsman's Club. We are going to have close to 40 vendors so you should definitely come check it out.

Finally, we will have our club picnic, potluck, and tailgate at the clubhouse Saturday, August 27th. Check your email for more information coming soon about this event.

Our busiest month is September with the Washington State Fair. Please sign up to volunteer at the club booth. You get free admission to the fair and parking. The Signup sheet will be at every meeting, just ask Tony or if you want to know about specific dates and times, contact him at (253) 863-9238.

Field Trip Report

August 6 & 7 Overnight - Greenwater

This fieldtrip is with the Washington State Mineral Council - overnight camp out & pot luck

Meeting place - 9:00AM at the Enumclaw Ranger Station for those not camping out

Hunting for - Jasper, Agate, Petrified wood, common opal

Tools you need - Rock hammer, shovel, pry bar, hammer, chisel and a backpack/bucket for your treasures

Access - this area is fairly easy to access

Additional items - lunch/snacks and water, water, water. Dress in layers

September 17 - Little Naches

Meeting place - 9:00AM on Hwy 410 at Forest Rd 19, mile marker 92

Hunting for - Jasper, Agate, Petrified wood, Thundereggs

Tools you need - **Rock hammer**, shovel, **pry bar**, hammer, **chisel**, treasure scoop, waders, and a backpack/bucket for your treasures

Access - moderate terrain, 1/2-mile hike to thunderegg site

Additional items - lunch/snacks and water, water, water. Dress in layers. Be prepared for ticks/mosquitoes

Please remember that even though we love to meet new people, fieldtrips are a member benefit and part of your membership dues covers you for injury liability.

Though injuries are rare, and we do everything we can to avoid them, we are going out into nature, and uncontrollable environment.

All individuals attending field trips will have to sign a release of liability, and if you are bringing guests, we will try to entice them into join the club by having Membership applications available.

AUGUST 2022 CLUB HOUSE SCHEDULE

DATE	DAY	TIME	ACTIVITY	LOCATION	INSTRUCTOR
1	Monday				
2	Tuesday	4:00PM-8:00PM	Members Open Access	Club House	Ed & Renera
3	Wednesday	10:00AM-2:00PM	Members Open Access	Club House	Dennis Batchelor
		4:00PM-8:00PM	Members Open Access	Club House	Tony Johnson
4	Thursday	4:00PM-8:00PM	Members Open Access	Club House	Tony Johnson
5	Friday				
6	Saturday	10:00AM-2:00PM	Members Open Access	Club House	Glen Ripper
		10:00AM-2:00PM	Greenwater - OVERNIGHT	Field Trip	Dennis Batchelor
7	Sunday	10:00AM-2:00PM	Greenwater - OVERNIGHT	Field Trip	Dennis Batchelor
8	Monday				
		7:00PM-8:00PM	Opal Club Business Meeting	Club House	Tony Johnson
9	Tuesday	4:00PM-8:00PM	Members Open Access	Club House	Ed & Renera
10	Wednesday	10:00AM-2:00PM	Members Open Access	Club House	Dennis Batchelor
		4:00PM-8:00PM	Wire Wrapping	Club House	Tony Johnson
11	Thursday	4:00PM-8:00PM	Members Open Access	Club House	Tony Johnson
12	Friday	6:00PM	Club Board Meeting	Fruitland Grange	Kevin Higgins
		7:30PM	Club Business Meeting	Fruitland Grange	Tony Johnson
13	Saturday	10:00AM-2:00PM	75th Anniversay Project	Club House	Tony Johnson
14	Sunday				
15	Monday				
16	Tuesday	4:00PM-8:00PM	Members Open Access	Club House	Ed & Renera
17	Wednesday	10:00AM-2:00PM	Members Open Access	Club House	Dennis Batchelor
			SHOW IN THE TREES		
18	Thursday		SHOW IN THE TREES		
19	Friday		SHOW IN THE TREES		
20	Saturday		SHOW IN THE TREES		
21	Sunday		SHOW IN THE TREES		
22	Monday				
23	Tuesday	4:00PM-8:00PM	Members Open Access	Club House	Ed & Renera
24	Wednesday	10:00AM-2:00PM	Members Open Access	Club House	Dennis Batchelor
		4:00PM-8:00PM	Members Open Access	Club House	Tony Johnson
25	Thursday	4:00PM-8:00PM	Members Open Access	Club House	Tony Johnson
26	Friday				
27	Saturday	1:00PM - 2:00PM	Club Picnic and Potluck	Club House	Tony Johnson
28	Sunday				
29	Monday				
30	Tuesday	DEADLINE FOR STATE FAIR COMPETITION SUBMISSIONS			
		4:00PM-8:00PM	Members Open Access	Club House	Ed & Renera
31	Wednesday	10:00AM-2:00PM	Members Open Access	Club House	Dennis Batchelor
Dennis Batchelor (360) 870-8741			Ed Knoll (253) 651-7453		Tony Johnson (253) 863-9238
Renera Barnes rsb1224@netscape.com			Jillian Higgins (253)355-3146		Glen Ripper (253) 508-7545

This schedule is subject to change. Please check the club website for updated information.

MEET THE MEMBERS

Name: Loren Gates

Favorite Quote: "Live life like there's no tomorrow".

What are your skills/past experience with the rock Club or rock hounding? "I have been a rock hound since I was 12 and was introduced by my aunt. I collected about 100 lbs. during my 12th year and collected zebra onyx, wood, nice red jasper in Arizona with my uncle."

What is your favorite rock, mineral or gem? Teanaway basalt because of all the goodies you can find in it.

What is your favorite thing to do with rocks, minerals or gems? "I like to take agates and polish a face on them and cut up slabs."

What are your three favorite books/podcasts?

- Autobond field guide to North American Rocks and Minerals
- "Mineralogy a first course", by John Sinkankas
- "Gem and Minerals of North America" by Ranson

What is your favorite memory surrounding rockhounding/rocks in general? "When my son, John, and his fiance, Allison found a stringer of crystals that turned into a wonderful find at First Creek."

In your opinion, what is the best thing about the Puyallup Valley Gem & Mineral Club? "The members are wonderful, and they are willing to share and there is no professional jealousy. Open, accepting and encourage to get more involved in lapidary. The availability to just try out stuff, cabbing, cutting, etc. so you can find out if this is for you."

In your opinion, where/how does the club need to improve? "Getting the word out and growing families in the club."

What are three (3) things people might not know about you?

- USA Wrestling Bronze Level Wrestling coach
- I have a need for speed and have owned motorcycles my whole adult life.
- I like hanging out with younger people, I can learn from them and can teach them a lot.

What is your greatest accomplishment? Surviving long enough to become a grandpa, and being a universal grandpa to all kinds of kids. ½ of my grandkids are assumed or adopted.

Clubhouse report

Tony Johnson

Please make sure you are cleaning up your machines after you are done with them. It is your responsibility to return the machine to the condition you found it.

There is a new machine down at the clubhouse. We now have 7 Genies for the membership to use. It was donated by Jim and Jan Nicole's and it was their hope that it be reserved for children in the club, unless there is overflow on certain days. A sign dedicated to their donation will be posted above the machine.

We also have our large saw up and running in the fruit house. Not familiar with the fruit house, just ask the instructor where it is. This saw is a 24" saw so it will only be used for your exceptionally large stones. Not sure if they will fit? Again, ask your instructor and they will assess the need.

My Gemstones

The Pretty, The Odd, The Rare...Kyanite

By Brett Lawrence

Stone size and shape: 1.8 ct., 10x4.8mm octagon cut
Some information: chemical composition – aluminum silicate; MOHS hardness – 4-5, 6-7; specific gravity – 3.67

Kyanite is an interesting mineral with industrial and commercial uses and as a attractive gemstone. It is also known as disthene and cyanite. Its name evolved from ancient Greek that has evolved into our current language as dark blue. Its blue name is also akin to the cyan.

Kyanite's color can range from deep sapphire-like blue, to lighter blue as with aquamarine or blue topaz. More rarely it can be yellow, orange, or pink. The orange color in the image is the result of small amounts of manganese included in the material's structure. This material comes from Tanzania. One quality of kyanite is that it is pleochroic, meaning different colors can appear when the gemstone is viewed from different angles.

Kyanite has a few other qualities that make it difficult for the gemstone lapidarist when faceting. One is anisotropism. A crystal and resultant gemstone will exhibit different hardness values depending on the axis or direction in the crystalline system. For example, a steel nail will scratch it when moved parallel to the long axis but will not do so when moved perpendicular or at right angles to it. Another challenge is its perfect cleavage or its ability to split along structural planes. The above issues, along with its lack of suitable hardness, (its durability) do not lend kyanite to use in everyday jewelry such as ring settings. These factors, however, would not preclude its use as a pendant or in earrings.

But such does not hinder kyanite's use in industry. It finds use as a refractory material that does not change or decompose in the presence of high heat or pressure. This makes it useful in kilns, furnaces, incinerators, and reactors. It is also finds use in electronics, in electrical insulators, and as an abrasive.

Kyanite is found in numerous locations around the world, including Myanmar, Cambodia, Kenya, Nepal, Tibet, Switzerland, Russia, and the United States.

Finally, kyanite is a polymorph with sillimanite and andalusite. All three have the same chemical composition but formed under different geological conditions of heat and pressure. I admire the wonderful blue color of kyanite but also find the fire and glitter of andalusite captivating...but that's another story.



Charoite

A purple mineral, gem material and ornamental stone

Article by: [Hobart M. King](#), PhD, RPG



Charoite Rough: A sawn piece of rock containing abundant charoite along with other minerals. These charoite-dominated rocks are known as charoitite. This specimen shows the typical color and interesting pattern of gem-grade material. It would be suitable for cutting cabochons and possibly for use in making a small sculpture. Image copyright iStockphoto / Gala_Kan.

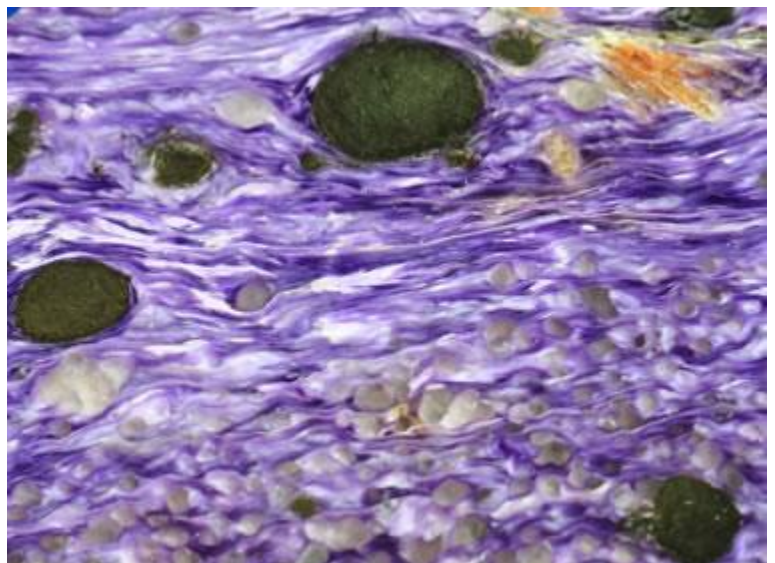
What is Charoite?

Charoite is the name of a purple to violet silicate [mineral](#) with a striking appearance. Its vibrant purple color grabs a person's attention. Then, upon closer examination, the viewer discovers interesting banding, swirls, scales, or radial and parallel [habits](#).

Many [rocks](#) that contain abundant charoite will accept a beautiful polish. As a result, high-quality pieces of charoite can be cut into spectacular purple [cabochons](#), or used as an ornamental stone to veneer a delightful jewelry box. A pearly [luster](#) or [chatoyance](#) often increases the beauty of this [gem](#).

Charoite is a rare mineral, found in commercial quantities only in a few small and closely spaced deposits in the Sakha Republic of eastern [Russia](#). It received its name from the Chara River, which drains that geographic area. [1]

Charoitite: A photomicrograph of charoitite, a rock that contains charoite in intimate association with numerous other minerals and sedimentary grains that were part of the protolith (parent rock). Image copyright iStockphoto / jonnysek.



Geologic Occurrence

The charoitite of the Sirenevy Kamen ("purple stone") deposit of eastern Siberia is thought to have formed when an alkali syenite intrusion encountered a [dolomite](#) containing a significant amount of terrigenous clastic sediment. The result was a complex geochemical environment of hydrothermal metasomatism. [2]

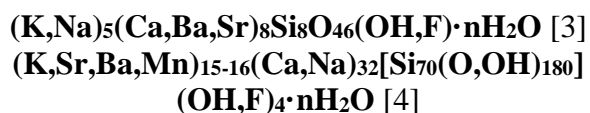
Mineral-rich fluids permeated the dolomite and surrounding rocks, forming charoite and a variety of other rare minerals with complex chemical compositions. The charoite in these rocks is impure and intimately mixed with microscopic particles of other rare minerals (see accompanying photomicrograph).

Physical Properties of Charoite

Chemical Classification	Silicate
Color	Purple to violet, light brown. Weathers to chalky white. Color caused by the presence of manganese.
<u>Streak</u>	White
<u>Luster</u>	Vitreous to pearly to silky
Diaphaneity	Semi-translucent to opaque
Cleavage	Three directions of cleavage, but rarely seen because of the material's texture. Breaks with a conchoidal fracture.
<u>Mohs Hardness</u>	5 to 6
Specific Gravity	2.5 to 2.6
Diagnostic Properties	Purple to violet color; fibrous to swirly color pattern, sometimes chatoyant, almost always impure.
Chemical Composition	$(K,Na)_5(Ca,Ba,Sr)_8Si_8O_{46}(OH,F) \cdot nH_2O$
Crystal System	Monoclinic
Uses	Rocks containing abundant charoite with a pleasing color and interesting pattern are often cut into gems or used as an ornamental stone.

Charoite's Chemical Composition

Charoite is a complex silicate mineral. Published chemical compositions are in disagreement. We checked numerous references, and each one presented a different composition. The compositions reported below are from the Glossary of Geology [3], the International Mineralogical Association [4], and Mindat.org [1].



Determining a composition for this mineral might be difficult for two reasons: 1) well-formed crystals and specimens of pure charoite have not been found; and, 2) charoite is always intimately associated with and intergrown with numerous other minerals.

Polished Charoite: A tumble-polished specimen of charoite exhibiting a wavy banded structure.

This is a gem-grade piece that could be used to make an attractive pendant or other item. Image copyright

iStockphoto / KrimKate.

Charoite

Charoite is only known from rocks that are either charoite-rich or charoite-dominated. The name used for these rocks is "charoitite". [5] Most people in the gem and lapidary trades simply refer to them as "charoite" and may not suspect that they are a rock which contains a variety of rare minerals.

Charoitite is a contact metamorphic rock that usually contains a variety of alkaline calcium silicate accessory minerals. These can include miserite, benstonite, canasite, tinaksite, pectolite, and fedorite. These are often associated with textural varieties of charoite and include: massive (miserite), parallel fibers (benstonite), and radially fibrous (canasite and tinaksite). [2]

Charoite Cabochons: Two cabochons of charoite.

The oval cab measures 24 mm x 43 mm, and the

teardrop-shaped cab measures 34 mm x 41 mm.



Charoite Information

[1] [Charoite](#), an article on the Mindat.org website, accessed December 2019.

[2] [Geology of Gems](#), by Eugenio Ya. Kievlenko, English Edition, edited by Art Soregaroli, Ocean Pictures Ltd., 468 pages, 2003.

[3] Charoite, a definition in the Glossary of Geology, Fifth Edition (Revised), by K.E. Nevendorf, J.P. Mehl, Jr., and J. Jackson, American Geosciences Institute, 800 pages, 2011.

[4] [Charoite](#), International Mineralogical Association, List of Minerals, accessed December 2019.

[5] [Charoitite](#), by James St. John, a photomicrograph and description published in Wikimedia Commons, accessed December 2019.

Uses of Charoite

Rocks containing abundant charoite with a pleasing color and interesting pattern are often cut into gems or used as an ornamental stone. Charoite cabochons, beads, [tumbled stones](#) and other items made of high-quality material can sell for high prices. Charoite is also used to make small sculptures and small utilitarian items that include vases, spheres, goblets, desk sets, small boxes, and decorative tiles.

High-quality charoite rough and items made from charoite are not abundant in the marketplace because the material is rare, costly, not regularly mined, and much of what is produced is consumed in Russia.

State Fair Competition Rules

HOBBY HALL HANDCRAFTS ENTRIES The Washington State Fair Departmental Exhibitors Rules and Regulations (link on page 3) governing all departments of The Fair are to be observed with a few additions.

1. Entry registration must be made online for all divisions by entry deadline. See page 4 for Online Entry Registration step-by-step instructions and page 2 for calendar of dates.
2. All entries should be brought into the Hobby Hall by the exhibitor. If it is necessary for someone else to bring the entry in, the entry must be pre-registered online prior to the entry deadline or properly labeled with Division and Class numbers by the exhibitor.
3. No entry fees will be charged.
4. All articles must be the handwork of an individual exhibitor. They must be finished within the last two years. No article can be exhibited a second year. SOILED OR OBVIOUSLY USED ITEMS WILL NOT BE ACCEPTED.
5. ALL ITEMS WILL BE PLACED IN THE MOST SUITABLE CLASS. Each entrant shall be limited to ONE ENTRY PER CLASS, as to enter more would, in effect, be competing against oneself. Entries may be reclassified by staff or judges.
6. The "OTHER" class will only be used if the item does not fit within any other class in a division.
7. Items that belong in one Division (ie, wood working) will not be accepted in another Division (ie, crafts).
8. All awards need not necessarily be awarded in each class at the discretion of the judge.
9. The Hobby Hall is mainly for amateur craftspersons to compete and exhibit their work. The Fair considers the following as professionals: Anyone who makes more than \$4,000 per year from the sale of the judged craft item. Anyone who has a certified teaching certificate for that craft. Anyone who is paid to demonstrate that craft where supplies or finished works are sold. Anyone who has won the Grand Champion for 2 consecutive years in that division must enter as a professional the following year. A professional craftspersons may not enter a craft item from their profession into any amateur division (ie. a professional of hand painted china may not enter a hand painted ornament in the 'Holiday Decorations' division).
10. Divisions for teachers and professionals are offered for Leather Craft, Decorative Arts, Soft Toys and Animals, Calligraphy, Jewelry, Paper Crafts and Hand Painted China.
11. If you have won the Grand Champion for two consecutive years in a division, you will NOT BE ALLOWED to enter that division for one year.
12. Junior divisions are offered in Leather Craft, Jewelry, Paper Crafts, Models, Lego Building and Ceramics and Pottery. Juniors choosing to enter other divisions will be competing with adults.
13. All items placed on display must remain for the full length of The Fair.
14. The Washington State Fair assumes no responsibility for loss or damage. Every reasonable precaution will be used to protect items on display.
15. No "For Sale" cards will be allowed on exhibits or in the building.

Field Trip Recap

Dennis Batchelor

We had 7 cars full of willing participants head up on a beautiful day. Everyone found some nice agate and jasper and a few small crystal plates, some with 1/2-inch crystals. The mountain flowers were in bloom.

COMMUNITY SUPPORTERS



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(253) 531-7294
4203 E 99th Street, Tacoma, WA 98446
Yankees_Diesel@comcast.net

MINERAL OF THE MONTH



Additionally, Lizardite in certain Hematite and looks really awesome patterns within the stone.

Lizardite was only named in 1955 and surprisingly has not Greek meaning. It was named by two gentlemen named Eric William Whittaker and Jack Zussman and was named after the Lizard Peninsula in Cronwall, England, which is where most is found. It can also be found in the United State, Canada, and South Africa.

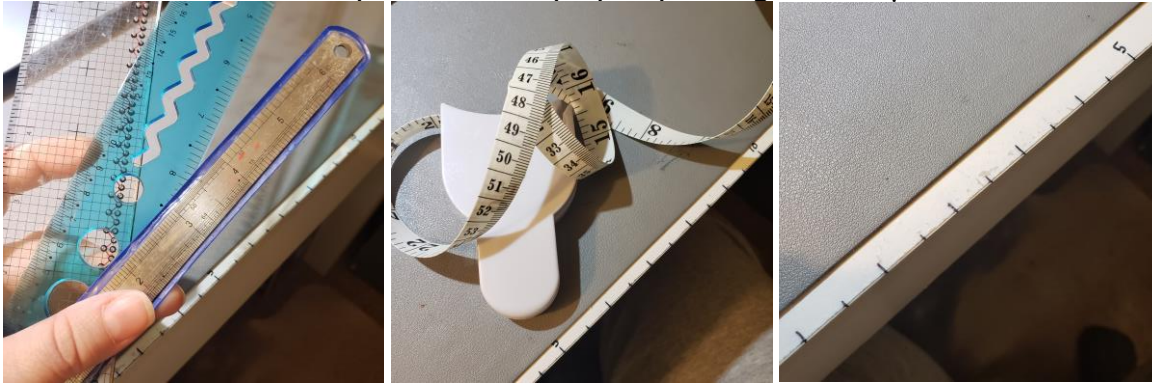


What do you think this beautiful green stone is? It looks so much like Peridot, but I suggest you look at the pictures below and see if you can get a better idea of what it is. All three are of the same mineral, but depending on its formation, it can present in many different ways. This amazing mineral is called Lizardite. Lizardite is from the Serpentine family which means its color variation has to do with the varying proportions of nickel to magnesium. circumstances will also contain and can cause some feathering



FROM THE BENCH

One of the most useful tools to have on/in my bench is a varied set of rulers and measuring tools. Weather I am measuring wire, bezel tape, stones, etc. I am always needing a measuring apparatus and I have multiple that I employ depending on how precise I need to be.



As you can see in the pictures, I keep several kinds of measuring rulers and taps on hand. I fell it is important to keep a flexible measuring tape for measuring around cabochons and other round objects. Additionally, I mark on my table and workbench a drawn-on ruler and I have seen where other metal workers will attach a thin metal ruler for easy access.

SUNSHINE REPORT

With everything going on, we have started meeting again, but our attendance at the meetings is still low as members are staying safe. As a group we need to bring to eachother's attention members who need healing thoughts or prayer sent their way.

Jim Christian is now home and recovering comfortably.
Jim Sawaya is still having medical issues. Your thoughts and prayers would be greatly appreciated.

Kathy Dirks is recovering from a health issue that caused her to be hospitalized. Please keep her in your thoughts.

If you know of anyone else who needs to be recognized in next months Sunshine Report , please email or call either
Tony Johnson at ynotopals@outlook.com (253) 863-9238 or
Jillian Higgins at J.Y.Higgins@gmail.com (253) 355-3146

2022 SHOW & TELL THEMES and PROGRAM NIGHT EVENTS

MEETING	DATE	SHOW & TELL THEME	PROGRAM NIGHT EVENT
January - 1st Meeting	January 14, 2022	Tiger's Eye or any field trip finds	
January - 2nd Meeting	January 28, 2022	Lace or any field trip finds	Mini Lapidary Demonstrations
February - 1st Meeting	February 11, 2022	Heart shaped or any field trip finds	
February - 2nd Meeting	February 25, 2022	Red, Pink, & Purple or any field trip finds	Carl Carlson
March - 1st Meeting	March 11, 2022	"Sham" rocks or any field trip finds	
March - 2nd Meeting	March 25, 2022	Green or any field trip finds	Jerry's Rock Shop
April - 1st Meeting	April 8, 2022	April Fools Gold or any field trip finds	
April - 2nd Meeting	April 22, 2022	No Show & Tell	Auction/Potluck
May - 1st Meeting	May 13, 2022	Flower rocks or any field trip finds	
May - 2nd Meeting	May 27, 2022	No Show & Tell	Mineral Council
June - 1st Meeting	June 10, 2022	Fancy Slabs & Fossils + any field trip finds	
June - 2nd Meeting	June 24, 2022	No Show & Tell	Tailgate Party @ Grange Parking Lot
July - 1st Meeting	July 8, 2022	Red, White, & Blue or any field trip finds	
July - 2nd Meeting	July 22, 2022	No Show & Tell	Jerry's Rock Shop
August - 1st Meeting	August 12, 2022	Carnelians + any field trip finds	
August - 2nd Meeting	August 27, 2022	No Show & Tell	Picnic & Tailgate Party at club house on Saturday
September - 1st Meeting	September 9, 2022	Crystals + any field trip finds	
September - 2nd Meeting	September 23, 2022	No Show & Tell	Glenn Rodrick
October - 1st Meeting	October 14, 2022	Wood + any field trip finds	
October - 2nd Meeting	October 28, 2022	No Show & Tell	Auction/Potluck
November - 1st Meeting	November 11, 2022	Thundereggs & Geodes + any field trip finds	
November - 2nd Meeting	November 25, 2022	No Show & Tell	BINGO Night
December - 1st Meeting	December 10, 2022	No Show & Tell	Holiday Banquet/Officer Installation on Saturday
December - 2nd Meeting	No Meeting	No Show & Tell	

2022 Elected Officers

Title	Name	Phone	Email
President:	Tony Johnson	(253)863-9238	ynotopals@outlook.net
Vice President:	Kevin Higgins	(253)579-3404	kevlar016@hotmail.com
Secretary:	Teresa Rodrick	(253)531-4062	gtrodi@comcast.net
Treasurer:	Jillian Higgins	(253)355-3146	J.Y.Higgins@gmail.com
Association Director:	Patti Dailey-Shives	(253)678-0029	pattidailey28@gmail.com
1 Year Director:	Jack Ragusa	(253)389-3119	jackragusa@gmail.com
2 Year Director:	Glen Ripper	(253)508-7545	glen311944@yahoo.com
1 Year Trustee:	Dennis Batchelor	(360)870-8741	hobbyhorse51@gmail.com
2 Year Trustee:	Glenn Rodrick	(253)531-4062	gtrodi@comcast.net

2022 Committee Chairs

Title	Name	Phone	Email
Clubhouse Coordinator	Tony Johnson	(253)863-9238	ynotopals@outlook.net
Club Show Coordinator	Glenn Rodrick	(253)531-4062	gtrodi@comcast.net
Field Trips Coordinator	Dennis Batchelor	(360)870-8741	hobbyhorse51@gmail.com
Web Master	Jillian Higgins	(253)355-3146	J.Y.Higgins@gmail.com
Editor/Communications	Jillian Higgins	(253)355-3146	J.Y.Higgins@gmail.com
Membership	Jillian Higgins	(253)355-3146	J.Y.Higgins@gmail.com
Sunshine	Tony Johnson	(253)863-9238	ynotopals@outlook.net
Newsletter	Jillian Higgins	(253)355-3146	J.Y.Higgins@gmail.com
Mineral Council	Patti Dailey-Shives	(253)678-0029	pattidailey28@gmail.com



WASHINGTON STATE MINERAL COUNCIL

The Puyallup Valley Gem & Mineral Club is a member of the American Lands Access Association and the Washington State Mineral Council. You can find more information about the ALAA at: amlands.org or the WA Mineral Council at:

HAPPY BIRTHDAY

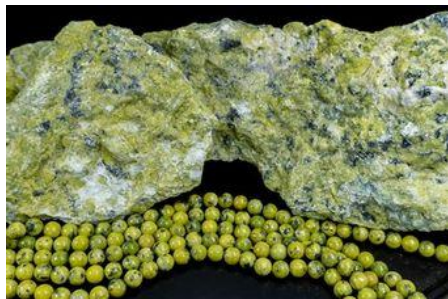
August 2022

Shawn Anderson – 3rd
 Robert Tubig – 3rd
 Joshua Montgomery – 4th
 Amanda Otis – 7th
 Tim Williams – 7th
 Jeffrey Blankenship – 8th
 Erica Joslin – 8th
 Norman Brown – 9th
 Glen Johnson – 9th
 Joan Engel – 9th
 Richard Cowan – 10th
 Alicia Guilbeau – 10th
 Rowan Higgins – 10th
 Randy Summers – 10th
 Barbara Perry – 11th
 Teresa Hurley – 14th
 Austin Jones – 15th
 John Engel – 15th
 Joan Lockyer – 16th
 Julie Murray – 16th
 Helen Hammond – 17th
 Mike Clark – 18th
 Mike Anderson – 19th
 Shirley Harmon – 20th
 Teresa Rodrick – 20th
 Karen Anderson – 21st
 Chris Roderick – 21st
 Neah Osche – 25th
 John Bellows – 26th
 Dana James – 26th
 Brianna Edwards – 26th
 Doni Phillips – 27th
 Isaac Minott – 30th
 Tasha Parker – 30th
 Nathan White – 30th
 Kye Hillig – 31st
 Glenda Moore – 31st
 Kegan McVey – 31st

WHAT'S IN A MINE

B C A R B O N D I O X I D E A K C
 O K L H G B I N E D R U B R E V O
 R C O A O A N O I T A M R O F K M
 E E A D I T N O I T A R O L P X E
 H N T V E M T G N I T R A P O B T
 O N R A E H A P U G N I L A E S H
 L O R N B I I D T E M A I G S T A
 E I E C C T N U T I C L F N M R N
 X T C E C C C S N H E G E I E A E
 P A O H E S A E A N S R N C L C N
 L M V Y S S S V I R E G U A T R O
 O A E O S H G L E Q F L O R I E T
 S L R A A U C D A I O T T B N P S
 I C Y F O N L A R E N I M T G P D
 V E T F I S S U R E J M I A U O N
 E R P O C K E T S G N I D A E H A
 S Y N C L I N E C N E D I S B U S

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|-------------------|----------------|-----------------|
| 1. ADIT | 13. FISSURE | 24. PITCH |
| 2. ADVANCE | 14. FORMATION | 25. POCKETS |
| 3. ASSAY | 15. GANGUE | 26. RECLAMATION |
| 4. AUGER | 16. HEADING | 27. RECOVERY |
| 5. BOREHOLE | 17. HOPPER CAR | 28. SANDSTONE |
| 6. BRACING | 18. INCLINE | 29. SEALING |
| 7. CARBON DIOXIDE | 19. METHANE | 30. SHUTTLE |
| 8. CAVE IN | 20. MINERAL | 31. SMELTING |
| 9. CLAIM | 21. MINESHAFT | 32. SUBSIDENCE |
| 10. CROSSCUT | 22. OVERBURDEN | 33. SYNCLINE |
| 11. EXPLORATION | 23. PARTING | 34. VEIN |
| 12. EXPLOSIVES | | |



ROCK-A-TEER

Newsletter of Puyallup Valley

Gem & Mineral Club

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