Rock-A-Teer

Puyallup Valley Gem & Mineral Club
Established October 9, 1948

Newsletter of the Puyallup Valley Gem & Mineral Club

Jillian Higgins

Issue 42 | Volume 95 | July | 2021

THIS ISSUE

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President's Perspective — Tony Johnson

It's getting hot … as I am sure you have noticed. Don't worry about the club house, we have 2 air conditioners at the club house to keep us cool can cabbing.

There will be some re-arranging in the saw room down at the club house, so don't be surprised to if things look different next time you are down there. Check out the club house report for more information.

The club is now communicating mostly by email. If you have not already, please checked your email for information, and update the membership director if you have had a change or added a new email address.

Field Trip Report

July 17 - Red Top
Meeting place - 10:00AM at Mineral Springs Recreational mile marker 156 on hwy 97
Hunting for - Agate, Jasper, Fossil Shells and Crystal Plates
Tools you need - Rock hammer, shovel, pry bar, hammer, chisel and a backpack/bucket for your treasures
Access - Moderate climb up a steep road cut.
Additional items - lunch/snacks and water, water, water. Dress in layers. Be prepared for ticks/mosquitoes

August 21 & 22 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

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.

JULY 2021 CLUB HOUSE SCHEDULE

DATE	DAY	TIME	ACTIVITY	LOCATION	INSTRUCTOR
1	Thursday	4:00PM-8:00PM	Members Workshop	Club House	Tony Johnson
2	Friday				
3	Saturday	10:00AM-2:00PM	Members Workshop	Club House	Glen Ripper
4	Sunday				
5	Monday	10:00AM-2:00PM	Members Workshop	Club House	Glen Ripper
6	Tuesday	4:00PM-8:00PM	Members Workshop	Club House	Renera & Ed
		7:00PM	Club Board Meeting	Fruitland Grange	Jim Christian
7	Wednesday	10:00AM-2:00PM	Members Workshop	Club House	Dennis Batchelor
		4:00PM-8:00PM	Wire Wrapping	Club House	Tony Johnson
8	Thursday	4:00PM-8:00PM	Members Workshop	Club House	Tony Johnson
9	Friday	7:30PM	Club Business Meeting	Fruitland Grange	Tony Johnson
10	Saturday	10:00AM-2:00PM	Intarsia	Club House	Tony Johnson
11	Sunday				
12	Monday	10:00AM-2:00PM	Members Workshop	Club House	Glen Ripper
		7:00PM-8:00PM	Opal Club Business Meeting	Club House	Tony Johnson
13	Tuesday	4:00PM-8:00PM	Members Workshop	Club House	Renera & Ed
14	Wednesday	10:00AM-2:00PM	Members Workshop	Club House	Dennis Batchelor
		4:00PM-8:00PM	Opal Cutting	Club House	Tony Johnson
15	Thursday	4:00PM-8:00PM	Members Workshop	Club House	Tony Johnson
16	Friday				
17	Saturday	10:00AM-2:00PM	Red Top	Field Trip	Dennis Batchelor
		10:00AM-2:00PM	Members Workshop	Club House	Glen Ripper
18	Sunday				
19	Monday	10:00AM-2:00PM	Members Workshop	Club House	Glen Ripper
20	Tuesday	4:00PM-8:00PM	Members Workshop	Club House	Renera & Ed
21	Wednesday	10:00AM-2:00PM	Members Workshop	Club House	Dennis Batchelor
		4:00PM-8:00PM	Wire Wrapping	Club House	Tony Johnson
22	Thursday	4:00PM-8:00PM	Members Workshop	Club House	Tony Johnson
23	Friday	7:30PM	Club Program Night	Fruitland Grange	Tony Johnson
24	Saturday	10:00AM-2:00PM	Flint/Obsidian Knapping	Club House	Craig Oda
25	Sunday				
26	Monday	10:00AM-2:00PM	Members Workshop	Club House	Glen Ripper
27	Tuesday	4:00PM-8:00PM	Members Workshop	Club House	Renera & Ed
28	Wednesday	10:00AM-2:00PM	Members Workshop	Club House	Dennis Batchelor
		4:00PM-8:00PM	Opal Cutting	Club House	Tony Johnson
29	Thursday	4:00PM-8:00PM	Members Workshop	Club House	Tony Johnson
30	Friday				
31	Saturday	10:00AM-2:00PM	Opal Cutting	Club House	Tony Johnson

For questions about a specific class or event, contact the instructor

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

*** **Membership Workshop** is the time when members can use the saws and cabbing machines

As of the publication of this schedule Pierce County is still in Phase 2 and is open on an appointment basis only. As soon as we enter into Phase 3 the club house will be allowed to open with limited conditions.

Club Show Report — Jim Christian

Even though our June 2021 Annual Valley of Gems show at Swiss Park looked a bit different than usual this year as everything was outside, we had a record-breaking number (37) of vendors join us. Even Mother Nature joined us for the first time with a couple of rain showers that sent everyone racing for cover. According to comments shared with our show team most vendors "did well" and enjoyed the ability to have a bit of extra room to extend their displays which was a new addition for the outside vendors.

From the club's perspective, we also did well. Geode cracking bulk bucket and regular club sales were as popular as ever, Our team had many conversations about what our club offers, and a number of folks signed up on the spot. Another thing we offered this year was an opportunity to learn about Ellensburg blue. Carl Carlson, our local Ellensburg blue expert, was with us on Saturday and Sunday sharing his knowledge and even bought examples, some of which were available for sale.

And, looking ahead to August, we are having our 2nd annual Gem Show in The Trees at the Tacoma Sportsmen's club on the 13th, 14th, & 15th. Currently the schedule calls for Carl Carlson to be with us there too and we'll be able to tell you more next month.

Finally, to all of the show team, thanks at each of you. Without you the show would not have been a success.

Clubhouse Report — Tony Johnson

Things are changing down at the club house. The saw room should be getting a revamp. The large saw will be moving into the tumbling room and some smaller saws will be moving into the saw room.

We are going to be working on the electrical to get things working better for us all. It will mean more capacity in the saw room, a reliable heater, possibly more equipment in the club house as a whole. We might need to shut down the club house for a couple of days for safety reasons, but we will give the club plenty of notice before that happens.

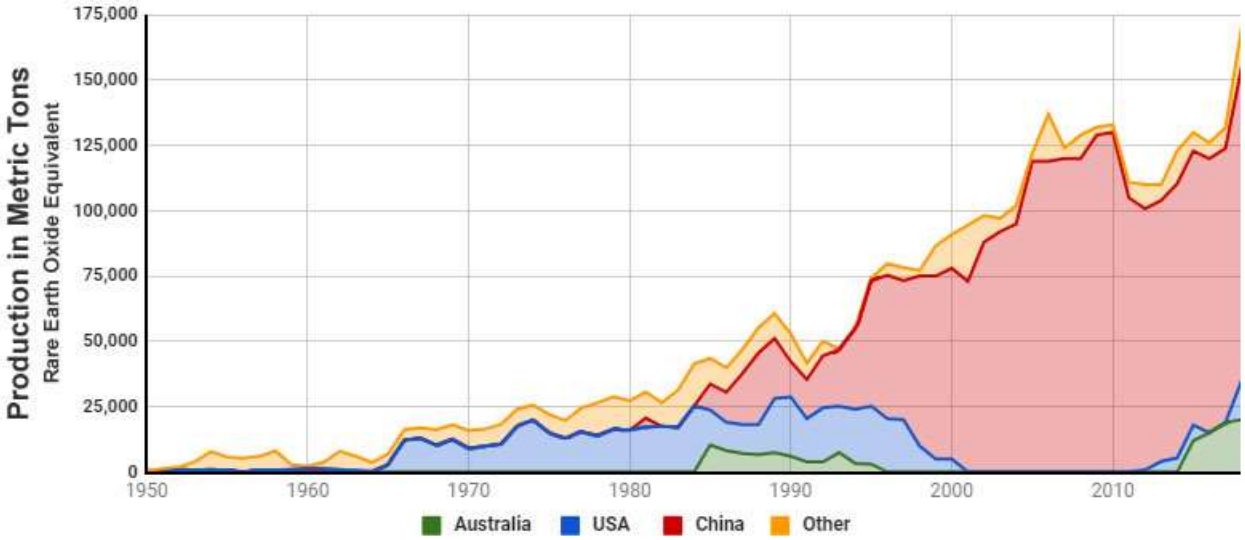
Field Trip Recap — Dennis Batchelor

Wild turkey mine was wild. We had a pretty good showing from our club and the Yakima club was present as well. We found some blue, yay, some chocolate giraffe and of course the ever present noble and lemon swirl Serpentine. Jim Sahli had fun helping everyone find what they were looking for and I'm sure everyone went home with plenty of material. Jim and Jennifer are the bomb for letting us dig at their mine for not much in payments. (I think he uses us to move material for him) Stay tuned for next year's trip.

REE - Rare Earth Elements and their Uses

The demand for rare earth elements has grown rapidly, but their occurrence in minable deposits is limited.

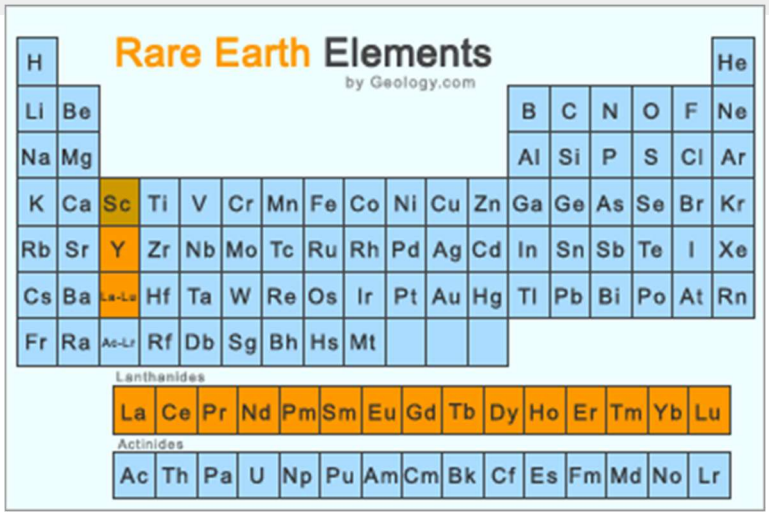
Article by: Hobart M. King, PhD, RPG



Rare Earth Element

Production: This chart shows a history of rare earth element production, in metric tons of rare earth oxide equivalent, between 1950 and 2018. It clearly shows the United States' entry into the market in the mid-1960s when color television exploded demand. When China began selling rare earths at very low prices in the late 1980s and early 1990s, mines in the United States were forced to close because they could no longer make a profit. [1] When China cut exports in 2010, rare earth prices skyrocketed. That motivated new production in the United States, Australia, Russia, Thailand, Malaysia, and other countries.

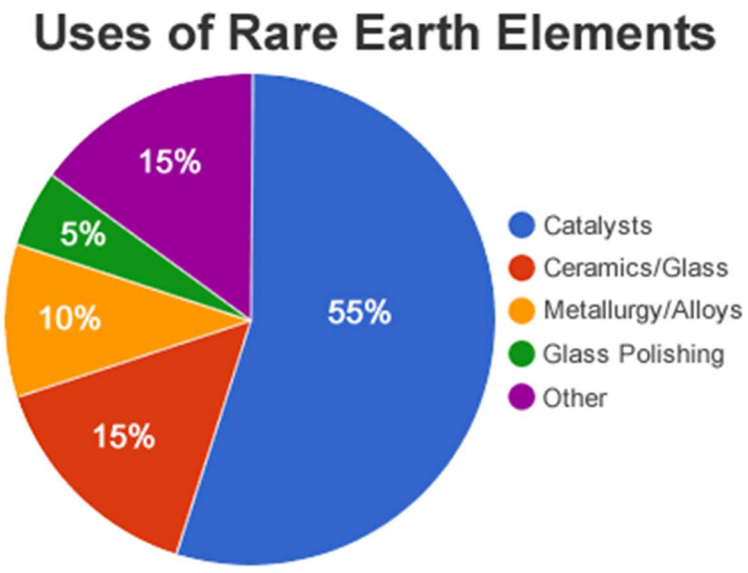
REE Periodic Table: The Rare Earth Elements are the 15 lanthanide series elements, plus yttrium. Scandium is found in most rare earth element deposits and is sometimes classified as a rare earth element. Image by Geology.com.



What Are Rare Earth Elements (REEs)?

Rare earth elements are a group of seventeen chemical elements that occur together in the periodic table (see image). The group consists of yttrium and the 15 lanthanide elements (lanthanum, cerium, praseodymium, neodymium, promethium, samarium, europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium, and lutetium). Scandium is found in most rare earth element deposits and is sometimes classified as a rare earth element. The International Union of Pure and Applied Chemistry includes scandium in their rare earth element definition.

The rare earth elements are all **metals**, and the group is often referred to as the "rare earth metals." These metals have many similar properties, and that often causes them to be found together in **geologic deposits**. They are also referred to as "rare earth oxides" because many of them are typically sold as oxide compounds.



Uses in the United States as reported by the United States Geological Survey Mineral Commodity Summary, 2017

Uses of rare earth elements: This chart shows the use of rare earth elements in the United States during 2017. Many vehicles use rare earth catalysts in their exhaust systems for air pollution control. A large number of alloys are made more durable by the addition of rare earth metals. **Glass**, **granite**, **marble**, and **gemstones** are often polished with **cerium oxide** powder. Many motors and generators contain magnets made with rare earth elements. Phosphors used in digital displays, monitors, and televisions are created with rare earth oxides. Most computer, cell phone, and electric vehicle batteries are made with rare earth metals.

Uses of Rare Earth Elements

Rare earth metals and alloys that contain them are used in many devices that people use every day such as computer memory, DVDs, rechargeable batteries, cell phones, catalytic converters, magnets, fluorescent lighting and much more.

During the past twenty years, there has been an explosion in demand for many items that require rare earth metals. Twenty years ago very few people owned a mobile phone, but today over 5 billion people own a mobile device. [3] The use of rare earth elements in computers has grown almost as fast as cell phones.

Many rechargeable batteries are made with rare earth compounds. Demand for the batteries is being driven by demand for portable electronic devices such as cell phones, readers, portable computers, and cameras.

United States Usage of Rare Earth Elements	
Chemical Catalysts	55%
Ceramics and Glass Making	15%
Metallurgy & Alloys	10%
Glass Polishing	5%
Other	15%
(2017 data from USGS)	

Several pounds of rare earth compounds are in batteries that power every electric vehicle and hybrid-electric vehicle. As concerns for energy independence, climate change, and other issues drive the sale of electric and hybrid vehicles, the demand for batteries made with rare earth compounds will climb even faster.

Rare earths are used as catalysts, phosphors, and polishing compounds. These are used for air pollution control, illuminated screens on electronic devices, and the polishing of optical-quality glass. All of these products are expected to experience rising demand.

Other substances can be substituted for rare earth elements in their most important uses; however, these substitutes are usually less effective and costly.

From the 1950s until the early 2000s, cerium oxide was a very popular lapidary polish. It was inexpensive and very effective. The recent price increases have almost eliminated the use of **cerium oxide** in **rock tumbling** and the lapidary arts. Other types of polish, such as **aluminum oxide** and **titanium** oxide, are now used in its place.

Defense Uses of Rare Earth Elements	
Lanthanum	night-vision goggles
Neodymium	laser range-finders, guidance systems, communications
Europium	fluorescents and phosphors in lamps and monitors
Erbium	amplifiers in fiber-optic data transmission
Samarium	permanent magnets that are stable at high temperatures
Samarium	precision-guided weapons
Samarium	"white noise" production in stealth technology

Critical Defense Uses

Rare earth elements play an essential role in our national defense. The military uses night-vision goggles, precision-guided weapons, communications equipment, GPS equipment, batteries, and other defense electronics. These give the **United States** military an enormous advantage. Rare earth metals are key ingredients for making the very hard alloys used in armored vehicles and projectiles that shatter upon impact.

Substitutes can be used for rare earth elements in some defense applications; however, those substitutes are usually not as effective and that diminishes military superiority. Several uses of rare earth elements are summarized in the accompanying table [6].

Did You Know? Most of the scandium used in the United States goes into aluminum-alloy baseball bats and other sports equipment [4]. Scandium is also used in semiconductors and specialty lighting. Image copyright iStockphoto / Dori OConnell.

Are These Elements Really "Rare"?

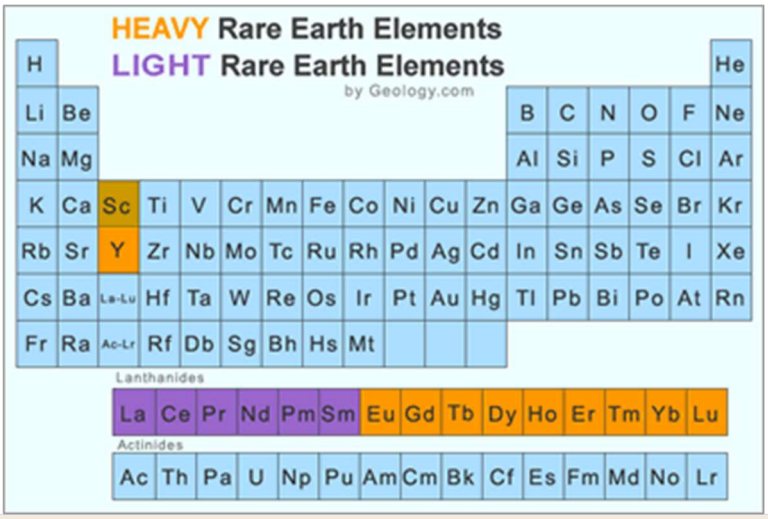
Rare earth elements are not as "rare" as their name implies. Thulium and lutetium are the two least abundant rare earth elements - but they each have an average crustal abundance that is nearly 200 times greater than the crustal abundance of **gold** [1]. However, these metals are very difficult to mine because it is unusual to find them in concentrations high enough for economical extraction.

The most abundant rare earth elements are cerium, yttrium, lanthanum and neodymium [2]. They have average crustal abundances that are similar to commonly used industrial metals such as **chromium**, **nickel**, **zinc**, molybdenum, tin, tungsten, and **lead** [1]. Again, they are rarely found in extractable concentrations.

Did You Know? Rare earth magnets are used in wind turbines. Some large turbines require two TONS of rare earth magnets. These magnets are very strong and make the turbines highly efficient. Rare earth magnets are used in turbines and generators in many alternative energy applications.

Did You Know? Prices and demand for rare earth materials have risen dramatically over the past decade. China produces about 90% of the supply. Deposits in Australia and the United States are going back into operation, and **exploration** in many new areas is progressing.

Heavy and light rare earth elements: The rare earth elements are often subdivided into "Heavy Rare Earths" and "Light Rare Earths." Lanthanum, cerium, praseodymium, neodymium, promethium, and samarium are the "light rare earths." Yttrium, europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium, and lutetium are the "heavy rare earths." Although yttrium is lighter than the light rare earth elements, it is included in the heavy rare earth group because of its chemical and physical associations with heavy rare earths in natural deposits.



Did You Know? Every hybrid-electric and electric vehicle has a large battery. Each battery is made using several pounds of rare earth compounds. The use of electric vehicles is expected to increase rapidly, driven by energy independence, climate change and other concerns. This will increase the demand for rare earth materials. Image copyright iStockphoto / Mark Stay.

Did You Know? Tiny amounts of rare earth metals are used in most small electronic devices. These devices have a short lifespan, and REE recycling is infrequently done. Billions are thrown away each year. Image copyright iStockphoto / Bakaleev Aleksey.

World Mine Production and Reserves (2017 Estimates)

Country	Production (Metric Tons)	Reserves (Metric Tons)
United States	--	1,400,000
Australia	20,000	3,400,000
Brazil	2,000	22,000,000
Canada	--	830,000
China	105,000	44,000,000
Greenland	--	1,500,000
India	1,500	6,900,000
Malawi	--	140,000
Malaysia	300	30,000
Russia	3,000	18,000,000
South Africa	--	860,000
Thailand	1,600	not available
Vietnam	100	22,000,000
World total (rounded)	130,000	120,000,000

History of Rare Earth Production and Trade

Pre-1965

Before 1965 there was relatively little demand for rare earth elements. At that time, most of the world's supply was being produced from placer deposits in **India** and **Brazil**. In the 1950s, **South Africa** became the leading producer from rare earth bearing **monazite** deposits. At that time, the Mountain Pass Mine in California was producing minor amounts of rare earth oxides from a Precambrian carbonatite.

Color Television Ignites Demand

The demand for rare earth elements saw its first explosion in the mid-1960s, as the first color television sets were entering the market. Europium was the essential material for producing the color images. The Mountain Pass Mine began producing europium from bastnasite, which contained about 0.1% europium. This effort made the Mountain Pass Mine the largest rare earth producer in the world and placed the United States as the leading producer.

China Enters the Market

China began producing notable amounts of rare earth oxides in the early 1980s and became the world's leading producer in the early 1990s. Through the 1990s and early 2000s, China steadily strengthened its hold on the world's rare earth oxide market. They were selling rare earths at such low prices that the Mountain Pass Mine and many others throughout the world were unable to compete and stopped operation.

Defense and Consumer Electronics Demand

At the same time, world demand was skyrocketing as rare earth metals were designed into a wide variety of defense, aviation, industrial, and consumer electronics products. China capitalized on its dominant position and began restricting exports and allowing rare earth oxide prices to rise to historic levels.

China as the Largest Rare Earth Consumer

In addition to being the world's largest producer of rare earth materials, China is also the dominant consumer. They use rare earths mainly in manufacturing electronics products for domestic and export markets. **Japan** and the United States are the second and third largest consumers of rare earth materials. It is possible that China's reluctance to sell rare earths is a defense of their value-added manufacturing sector.

China's Apex of Production Dominance?

The Chinese dominance may have peaked in 2010 when they controlled about 95% of the world's rare earth production, and prices for many rare earth oxides had risen over 500% in just a few years. That was an awakening for rare earth consumers and miners throughout the world. Mining companies in the United States, **Australia**, **Canada**, and other countries began to reevaluate old rare earth prospects and explore for new ones.

High prices also caused manufacturers to do three things: 1) seek ways to reduce the amount of rare earth elements needed to produce each of their products; 2) seek alternative materials to use in place of rare earth elements; and, 3) develop alternative products that do not require rare earth elements.

This effort has resulted in a decline in the amounts of rare earth materials used in some types of magnets and a shift from rare earth lighting products to light-emitting diode technology. In the United States, the average consumption of rare earths per unit of manufactured product has decreased, but the demand for more products manufactured with rare earth elements has increased. The result has been higher consumption.

China Buying Resources Outside of China

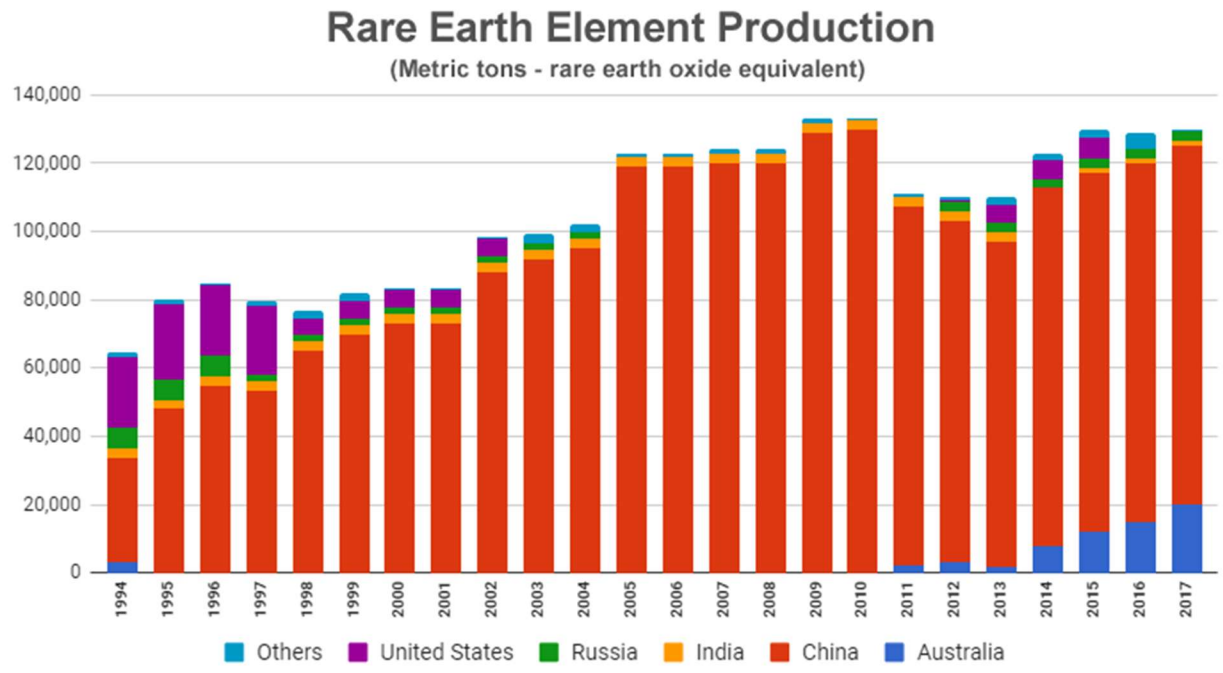
Chinese companies have been purchasing rare earth resources in other countries. In 2009 China Non-Ferrous Metal Mining Company bought a majority stake in Lynas Corporation, an Australian company that has one of the highest outputs of rare earth elements outside of China. They also purchased the Baluba Mine in **Zambia**.

Rare Earth Production Outside of China

Mines in Australia began producing rare earth oxides in 2011. In 2012 and 2013 they were supplying about 2% to 3% of world production. In 2012 the Mountain Pass Mine came back into production, and the United States produced about 4% of the world's rare earth elements in 2013. Production in Brazil, **Malaysia**, **Russia**, **Thailand** and **Vietnam** continued or increased.

New mineral resource assessments conducted by the United States Geological Survey identified significant resources outside of China. Although China is the world leader in rare earth production, they only control about

36% of the world's reserves. This provides an opportunity for other countries to become important producers now that China is not selling rare earth materials below the cost of production.



REE production chart: This chart shows China's dominance in the production of rare earth elements between 1994 and 2017. The United States was a significant producer through the 1990s, but low-priced materials being sold by China forced mines in the United States and other countries out of operation. As China limited exports, and prices increased rapidly in 2009 and 2010, mines in Australia and the United States became active again. Graph by Geology.com using data from the United States Geological Survey.

Dangers of a Dominant World Producer

Supply and demand normally determine the market price of a commodity. As supplies shrink, prices go up. As prices go higher, those who control the supply are tempted to sell. Mining companies see high prices as an opportunity and attempt to develop new sources of supply.

With rare earth elements, the time between a mining company's decision to acquire a property and the start of production can be several years or longer. There is no fast way to open a new mining property.

If a single country controls almost all of the production and makes a firm decision not to export, then the entire supply of a commodity can be quickly cut off. That is a dangerous situation when new sources of supply take so long to develop.

In 2010 China significantly restricted their rare earth exports. That was done to ensure a supply of rare earths for domestic manufacturing and for environmental reasons. This shift by China triggered panic buying, and some rare earth prices shot up exponentially. In addition, Japan, the

United States, and the European Union complained to the World Trade Organization about China's restrictive rare earth trade policies.

Rare earth oxides: These rare earth oxides are used as tracers to determine which parts of a watershed are eroding [5]. Clockwise from top center: praseodymium, cerium, lanthanum, neodymium, samarium, and gadolinium. Image by Peggy Greb, USDA image gallery.

World Rare Earth Mineral Resources

"Rare earths are relatively abundant in the Earth's crust, but discovered minable concentrations are less common than for most other ores. U.S. and world resources are contained primarily in bastnäsite and **monazite**. Bastnäsite deposits in China and the United States constitute the largest percentage of the world's rare-earth economic resources, while monazite deposits in Australia, Brazil, China, India, Malaysia, South Africa, **Sri Lanka**, Thailand, and the United States constitute the second largest segment. [7]

Apatite, cheralite, eudialyte, loparite, phosphorites, rare-earth-bearing (ion adsorption) clays, secondary monazite, spent uranium solutions, and xenotime make up most of the remaining resources. Undiscovered resources are thought to be very large relative to expected demand." Quoted from the United States Geological Survey's Mineral Commodity Summary [2].

Rare Earth Element Outlook

The global demand for automobiles, consumer electronics, energy-efficient lighting, and catalysts is expected to rise rapidly over the next decade. Rare earth magnet demand is expected to increase, as is the demand for rechargeable batteries. New developments in medical technology are expected to increase the use of surgical lasers, magnetic resonance imaging, and positron emission tomography scintillation detectors.

Rare earth elements are heavily used in all of these industries, so the demand for them should remain high.

SUNSHINE REPORT

With everything going on, we have not had a chance to meet as a group and bring to eachother's attention members who need healing thoughts or prayer sent their way.

Jim Christian has been in and out of the hospitle lately. Please keep him 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

COMMUNITY SUPPORTERS

SOUTH HILL RV SALES Family Owned & Operated	**South Hill RV Sales** Offering the highest rated starter, midline, and high end towables and RV's at the lowest prices which has made us a top volume dealer in Washington state. 12414 Meridian East, Puyallup 98373 253-435-7751 or 866-435-7751 www.southhillrv.com
RICE MUSEUM OF ROCKS & MINERALS	**Rice Museum of Rocks & Minerals** To engage, inspire, and educate generations on the splendor and complexity of our Earth. 26385 NW Groveland Dr., Hillsboro, OR 97124 503-647-2418 Info@ricenorthwestmuseum.org www.ricenorthwestmuseum.org
H & I Lapidary	Amber, Jewelry, Beads, Findings, Gemstones, Slabs, Rough Material, Fossils, and Aussie items. Mike and LaVon Siperek (253) 531-7294 4203 E 99th Street, Tacoma, WA 98446 Yankees_Diesel@comcast.net

Tony Johnson
253-863-9238

Join us on facebook

NORTHWEST ASSOCIATION OPAL

Workshops
call for dates/times

Meetings
2nd Mon. each month

2021 SHOW & TELL THEMES and PROGRAM NIGHT EVENTS

MEETING	DATE	SHOW & TELL THEME	PROGRAM NIGHT EVENT
January - 1st Meeting	January 8, 2021	Tiger's Eye or any field trip finds	
January - 2nd Meeting	January 22, 2021	Lace or any field trip finds	To Be Announced
February - 1st Meeting	February 12, 2021	Heart shapped or any field trip finds	
February - 2nd Meeting	February 26, 2021	Red, Pink, & Purple or any field trip finds	To Be Announced
March - 1st Meeting	March 12, 2021	"Sham" rocks or any field trip finds	
March - 2nd Meeting	March 26, 2021	Green or any field trip finds	To Be Announced
April - 1st Meeting	April 9, 2021	April Fools Gold or any field trip finds	
April - 2nd Meeting	April 23, 2021	**No Show & Tell**	Auction/Potluck
May - 1st Meeting	May 14, 2021	Flower rocks or any field trip finds	
May - 2nd Meeting	May 28, 2021	**No Show & Tell**	To Be Announced
June - 1st Meeting	June 11, 2021	Fancy Slabs & Fossils + any field trip finds	
June - 2nd Meeting	June 25, 2021	**No Show & Tell**	Tailgate Party @ Grange Parking Lot
July - 1st Meeting	July 9, 2021	Red, White, & Blue or any field trip finds	
July - 2nd Meeting	July 23, 2021	**No Show & Tell**	To Be Announced
August - 1st Meeting	August 13, 2021	Carnelians + any field trip finds	
August - 2nd Meeting	Saturday August 28, 2021	**No Show & Tell**	Picnic & Tailgate Party at club house on Saturday
September - 1st Meeting	September 10, 2021	Crystals + any field trip finds	
September - 2nd Meeting	September 24, 2021	**No Show & Tell**	Mini Lapidary Demonstrations
October - 1st Meeting	October 8, 2021	Wood + any field trip finds	
October - 2nd Meeting	October 22, 2021	**No Show & Tell**	Auction/Potluck
November - 1st Meeting	November 12, 2021	Thundereggs & Geodes + any field trip finds	
November - 2nd Meeting	November 26, 2021	**No Show & Tell**	BINGO Night
December - 1st Meeting	Saturday December 11, 2021	**No Show & Tell**	Holiday Banquet/Officer Installation on Saturday
December - 2nd Meeting	No Meeting	**No Show & Tell**	

2021 Elected Officers - Carry Over Until Election

Title	Name	Phone	Email
President:	Tony Johnson	(253)863-9238	ynotopals@outlook.net
Vice President:	Jim Christian	(253)720-9502	Jimchristian_205@hotmail.com
Secretary:	Teresa Rodrick	(253)531-4062	gtrodi@comcast.net
Treasurer:	Jillian Higgins	(253)355-3146	J.Y.Higgins@gmail.com
Association Director:	Bill Clark	(360)893-6919	clarkwa@comcast.net
1 Year Director:	Glen Ripper	(253)508-7545	glen311944@yahoo.com
2 Year Director:	Patti Dailey-Shives	(253)678-0029	pattidailey28@gmail.com
1 Year Trustee:	Glenn Rodrick	(253)531-4062	gtrodi@comcast.net
2 Year Trustee:	Dennis Batchelor	(360)870-8741	hobbyhorse51@gmail.com

2021 Committee Chairs

Title	Name	Phone	Email
Club house Coordinator	Tony Johnson	(253)863-9238	ynotopals@outlook.net
Club Show Coordinator	Jim Christian	(253)720-9502	Jimchristian_205@hotmail.com
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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: mineralcouncil@zoho.com

HAPPY BIRTHDAY

July 2021

Barb Beckstead – 1st
Scott Bills – 1st
Larry Clampitt – 1st
Aaron Guay – 1st
Jeff Elden – 1st
Elizabeth Mobley – 3rd
Hiromi Saito – 3rd
Paul Puskar – 4th
Logan Herrman – 5th
Jessie James – 5th
Chloe James – 5th
Daimy Mitchell – 6th
Gary Burgess – 7th
Nataly Herrman – 7th
Giovanna Owens – 8th
Taylor Vrieze – 8th
Debbie Overman – 11th
Lois Knoll – 12th
Dave Sanderson – 12th
Sandy Hoffman – 13th
Allen Yanity – 13th
Liz Donnelly – 14th
Fred Welcher – 15th
Rubiann Perkins – 15th
Ian Thompson – 17th
Corbin Cowan – 19th
Sharon Dean – 20th
Titus Bills – 22nd
Michele Caple – 22nd
Ralph Davis – 24th
Dean Maves – 29th
Jeanine Crijns – 30th
Sharnel Divona – 30th

A SOFTER TOUCH (MOH'S 1-3.5)

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

1. ADAMITE
2. ANGLESITE
3. ANHYDRITE
4. ARTINITE
5. AZURITE
6. BARITE
7. BORAX
8. CERUSSITE
9. ERYTHRITE
10. GALENA
11. GYPSUM
12. HOWLITE
13. MILLERITE
14. ORPIMENT
15. PHOSGENITE
16. SALT
17. SCOLECITE
18. SIDERITE
19. STIBNITE
20. SULFUR
21. TALC
22. TORBERNITE
23. ULEXITE
24. VANADINITE
25. VIVIANITE
26. WAVELLITE
27. WULFENITE



ROCK-A-TEER

Newsletter of Puyallup Valley
Gem & Mineral Club
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