

# Jade State News

WYOMING STATE MINERAL AND GEM SOCIETY, Inc. - P.O. Box 697, CODY, WYOMING 82414

Volume 2016, Issue 1

## THE REVENANT FOSSILS THE RETURN OF PAST LIFE

*By Stan Strike*



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**T**he Revenant is currently a popular movie featuring the real life story of Hugh Glass' survival after being left for dead. Revenant- is defined in dictionaries as: one that returns after death or a long absence, something that returns, and to come back. Fossils should also be considered revenant because they allow an interpretation of the existence of former animal and plant life throughout geologic time.

It is estimated that more than 95% of past life was never fossilized in the first place. This is because the odds are firmly stacked against any organism ever making it into the fossil record for several reasons:

- the composition of the original organism is such that only rarely, under very special conditions, can it be preserved.
- the microbial army of decomposers have always been highly efficient.
- the specific chemical and physical requirements associated with rapid burial and the slow passage of geologic time for lithification (turning to rock).
- living organisms have been exposed to catastrophic environmental disasters that have resulted in mass extinctions throughout geological time.

As fossils are exposed for our viewing, their existence should be held in reverence as the remains of a once living organism. Fossil remains allow us to interpret information about the past environmental conditions in which this specific individual lived.

[See Figure 1]



Figure 1: An Array of Fossilized Remains of Living Things From the Past <https://www.fossilera.com/>  
The following information provides evidence of why fossils are revenants that allow them to return to us with clues about when they were alive.

#### I. SIR CHARLES LYELL USE OF FOSSILS TO ESTABLISH GEOLOGIC TIME

Sir Charles Lyell is recognized as the Father of Modern Geology. He lived during a time period in which the dominant world view was that the Earth was only 6,000 years old.

**Article continued page 5**

## Wyoming State Mineral & Gem Society STATE OFFICERS

**President:** Stan Strike  
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**Vice President:** Linda Richendifer  
[vpres@wsmgs.org](mailto:vpres@wsmgs.org)

**Secretary:** Carla Tillman  
[sec@wsmgs.org](mailto:sec@wsmgs.org)

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WSMGS Board reports are published in our newsletter, the  
[Jade State News](#)



Let's go rock'n

## WSMGS INFORMATION AND UPDATES *by Stan Strike, President*



### I. WSMGS ELECTRONIC BOARD MEETING- JANUARY 21, 2016

-All Board Members Present: Stan Strike, Linda Richendifer, Carla Tillman, Melvin Gustin, Rod Baltis, and Verne Orcutt.

#### A. President's Electronic Meeting Instructions to Board Members:

As a WSMGS Board Member, I would ask you to read this Electronic Meeting email and VOTE on all Action Items by

selecting "Reply All" after typing your name and indicating an "Agree or Disagree" vote for each numbered Action Item. **The Deadline for your responses by "Reply All" email will be Monday, January 25th.** Board members are encouraged to submit old or new business items that have not been included in this meeting and a special attachment will be sent out for the entire WSMGS Board's consideration.

#### B. Secretary's Report:

1. Electronic WSMGS Board Meeting Minutes for October 22, 2015 are as printed in the November 2015 Jade State News which is available online: [wsmgs.org](http://wsmgs.org) under the heading Newsletters.

#### C. Treasurer's Report:

Balance-1/21/16 \$2826.88

#### D. President's Report:

1. Thank You to all of the WSMGS affiliated clubs for sending your WSMGS Dues and 2016 Membership Update form. Our RMFMS State Director -Jim McGarvey- has also confirmed that all WSMGS clubs except (Casper) have also submitted the proper paper work and dues to RMFMS.

*Continued on Page 3*

The Wyoming State Mineral and Gem Society (WSMGS) is a non-profit organization, with the purpose of educating, promoting and developing an interest and understanding in the Earth Sciences, Lapidary Arts, and their related fields for its affiliated members as well as the general public. The WSMGS is a member of the Rocky Mountain Federation of Mineralogical Societies (RMFMS) and the American Federation of Mineralogical Societies (AFMS). WSMGS Member Clubs are located in Casper, Cheyenne, Cody, Powell, Riverton, and Torrington, Wyoming. The WSMGS invites you to explore our website for information about Wyoming's minerals, rocks, fossils, and gemstones as well as for an introduction to the people and places that rockhounds can visit, explore and learn.

You can find us at: <http://www.WSMGS.org>

# WSMGS INFORMATION AND UPDATES *continued*

2. On December 3, 2015 the following email was sent to all WSMGS Club contacts and WSMGS Board Members:  
WSMGS CLUB REPORT REMINDERS  
- November 1st to December 15th- 2016 WSMGS Membership Dues Report to current WSMGS Treasurer: Melvin Gustin: [treas@wsmsg.org](mailto:treas@wsmsg.org) (Form can be found on the WSMGS web-site: [wsmsg.org](http://wsmsg.org) under "Who We Are Forms".)
- November 1st to December 15th- 2016 WSMGS Club Election of Officers Report to current Vice President: Linda Richendifer [vpres@wsmsg.org](mailto:vpres@wsmsg.org) (Form can be found on the WSMGS web-site: [wsmsg.org](http://wsmsg.org) under "Who We Are Forms".)
- November 1st to December 15th - RMFMS 2015 Dues to RMFMS treasurer (Form is available on the RMFMS website)
- December 15th to January 15th- WSMGS Club Annual Report and or Club Minutes to current Historian: Rod Baltes [hist@wsmsg.org](mailto:hist@wsmsg.org)
- January 1st to May 15th-Form 990N must be electronically submitted to the IRS (The Registered agent for each club should receive this form from the IRS in advance of the deadline).
- Deadline for Annual Report to WY Sec. of State Varies by WSMGS Club-Deadline for renewal of "Non Profit Corporation Annual Report" varies by club and is due the 1st day of the month in which the club was first recognized by the Wyoming Secretary of State as a Non Profit Corporation.  
(The Registered Agent for your club should receive this form in advance of the club's deadline.)
3. Our past WSMGS vice-president- George Tillman-was contacted

about (1) engraving the plaque for the State Rockhound of the Year winners and (2) the People's Choice traveling trophy for winners for 2013, 2014, & 2015.

4. Verne Orcutt, our Jade State News letter Editor, has entered the August & November, 2015 Jade State Newsletters to be judged in the RMFMS Newsletter competition. Winners are advanced to the AFMS competition. Verne spends many hours on the details and turns out a great newsletter.

## E. Old Business:

1. **Action Item #1- Nomination of RMFMS State Director:**  
**Discussion:** Jim McGarvey, our present RMFMS State Director, has submitted his resignation to RMFMS effective April 2016. Previously the State Director has been a WSMGS Board member and we have financially supported their expenses in order to attend the Annual RMFMS Convention. I have been contacted by DeLane Cox, past RMFMS President, to submit a replacement name by March 1st. **Proposed Nomination: The WSMGS Board initially appoint the WSMGS President to serve as the RMFMS State Director. The State director can be replaced with another WSMGS Board member by a majority vote of the WSMGS Board and approval of the RMFMS.**

**\*\*\* VOTE Action Item #1-Approval of WSMGS President/WSMGS Board Member as RMFMS State Director.**

= UNANIMOUS AGREEMENT

2. **Action Item #2- Recruitment & Formation of New WSMGS Affiliated Clubs:**  
**Discussion:** The previous WSMGS Board discussed with individuals from the Marbleton/Big Piney/Pinedale area about the formation of a new Rock club in that area. At

the Annual Meeting in Cody this past summer, it was determined that there was still an interest and it was agreed that representatives of WSMGS would help organize interested individuals during the spring of 2016. (There is a new rock shop opening in the Gillette area and may also be a possible new WSMGS Club location.) **In order to cover the cost of the advertising-motel-meals- -gasoline involved with recruitment, two WSMGS representatives would be reimbursed by the WSMGS treasurer in the amount not to exceed \$200 per potential club. WSMGS representatives will be appointed by the WSMGS President.**

**\*\*\* VOTE Action Item #2-Approval of Recruitment of New WSMGS Clubs and Associated Funding Not to Exceed \$200 per Potential Club**

= UNANIMOUS AGREEMENT

3. **Action Item #3: Financial Award to First Place Winner of State 4H Fair-Geology Division:**  
**Discussion:** The previous WSMGS Board has donated \$25 annually towards this award. The WSMGS is credited with this donation in the WY State Fair Booklet. The WSMGS is registered as a charitable organization but only donates \$50 annually: \$25/4H and \$25/local museum.

**\*\*\*VOTE Action Item #3-Approval of Increasing 4H donation to \$50 and regional museum to \$100.**

= UNANIMOUS AGREEMENT

## F. New Business:

1. **Action Item #4-Request by Rex Young Club for WSMGS Board to Sponsor Silent Auction at the 2016 WSMGS State Show in Torrington, June 25-26, 2016.**

*Continued at the top of page 4*

**Discussion:** Kim Nielsen said that their club, whose membership is less than 25, could supply some of the silent auction materials and the WSMGS Board would keep all associated profits. The attending club & board members donated items to sell and signed up for 2 hour blocks both days. This method was less labor intensive during the show and resulted in more money than a traditional Silent Auction. The WSMGS Board made over \$750.

**\*\*\* VOTE Action Item #4-Approval of WSMGS Board To Sponsor Silent Auction Area at 2016 Show As Approved by Rex Young Club**

= UNANIMOUS AGREEMENT

**2. Action Item #5- Privacy of Personal Information in the Jade state News and WSMGS Website**

Discussion: The AFMS, in their February 2016 Newsletter, published an article-“Dissecting the Internet Posting Policy (IPP) for Officers and Members. The following excerpts deal with Personal Privacy: (1) No web page content may allow the public accessing the website to contact any club member directly-unless prior permission is given by that individual to post their personal information on the website. (2) A junior member or child’s full name or email address may never appear on the website (3) Permission must be obtained from any club member prior to displaying his/her photo graph or information on the web site. The WSMGS does publish a list annually of personal contact information for all WSMGS affiliated Clubs which is sent out to each club’s email contacts with a caution: FOR INTERNAL CLUB USE ONLY. The WSMGS has also established ALIAS EMAIL ADDRESSES for all Clubs and WSMGS officers to protect their

personal email addresses.

**\*\*\* VOTE Action Item #5- Approval of adopting the above AFMS recommendations in regards to Personal Privacy.**

= UNANIMOUS AGREEMENT

**Meeting Adjourned**

**II. UPDATES:**

**A. Personal Privacy Policy of WSMGS:** In the previously written Electronic Meeting Minutes, Action Item #5 referenced Privacy of Personal Information in the Jade State News and the WSMGS website. This was approved by the WSMGS Board, resulting in the elimination of personal phone numbers, emails, and mailing addresses on documents generated by WSMGS that can be viewed by the public. A WSMGS Membership List will be sent out to the contacts of each WSMGS affiliated club which will contain personal information for all WSMGS Board members and club officers. This Membership List is for internal club use only-never to be available to the public.

**B. Alias Emails:** The WSMGS Board has previously established Alias Email Addresses for all Board Members and WSMGS affiliated clubs. When these alias email addresses are used, the email is directed to the intended WSMGS officer and/or club. When club alias email is sent, it is directed to the club contacts’ personal email addresses. If you are a club contact, direct the email information to the appropriate club members. Below is a listing of these alias emails to be used:

- pres @wsmgs.org
- vpres@wsmgs.org
- sec@wsmgs.org
- treas@wsmgs.org
- hist@wsmgs.org

- jsn@wsmgs.org
- wydir@wsmgs.org
- cody59ers@wsmgs.org
- rivertonmgs@wsmgs.org
- rexyoungrockclub@wsmgs.org
- shoshonerockclub@wsmgs.org
- cheyennemgs@wsmgs.org
- natronarockhounds@wsmgs.org

**C. RMFMS Convention-April 22-24<sup>th</sup>-Wichita, KS:** Your club contacts received a convention packet last month and 1/26/16. Each club is eligible to have 2 delegates at this convention. If your club chooses not to go, please fill out the Proxy Form (leaving the WE FURTHER CONSTITUTE AND APPOINT: section blank), then scan and email to our RMFMS State Director- Jim McGarvey at: wydir@wsmgs.org by March 1<sup>st</sup>.

**D. WHO IS ROY?**

R.O.Y. is an acronym for **Rockhound of the Year** that is a special program that the American Federation of Mineralogical Societies (AFMS) initiated to encourage rock clubs to recognize members who have put forth special effort to promote their club and rockhounding.

The Wyoming State Mineral and Gem Society (WSMGS) promotes two R.O.Y. Awards:

- the Club Rockhound of the Year which should be a nomination determined by each club’s membership. A nomination by each club may be one (1) adult member OR one (1) adult couple AND one (1) junior member (Age 17 or Younger).
- the State Rockhound of the Year (can be nominated by individuals or by clubs in addition to their single Club R.O.Y. nomination).

Updates concluded at top of page 5

All nominations for Club and State Rockhound of the Year will be considered by a panel of 3<sup>rd</sup> party judges and eligible to be selected as the Wyoming State Rockhound of the Year. At the WSMGS Annual meeting all Club Rockhounds of the Year will receive certificates and the Wyoming State Rockhound will receive an engraved rock slab in addition to having their name added to the Wyoming State R.O.Y. plaque. In addition all nominees' names will be submitted to the Rocky Mountain Federation of Mineralogical Societies (RMFMS) for possible recognition as American Federation of Mineralogical Societies (AFMS) Club Rockhound of the Year.

**ALL R.O.Y. forms are on the [wsmgs.org](http://wsmgs.org) website under the heading-Who We Are and DUE APRIL1<sup>ST</sup>.**

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## **The Revenant Fossils**

**Continued from page 1**

This belief was the result of Archbishop of Ireland-James Ussher's (1581-1656) famous proclamation based on the Bible and counting all of the different elements of the Creation in the book of Genesis.

After studying European rock layers and the fossils they contained for decades, Lyell made two trips to the United States in the 1840's. As a result of his observations, Lyell noted the following:

- rocks were layered in an orderly fashion, with more recent rocks on top of older layers.
- similar fossils and sequences of rock layering in England and the United States.
- identical rock sequences containing specific fossil species were repeated in widely separated locations, making it possible to compare and to date their deposition relative to each other.
- the processes and environments that formed certain rock types and fossils were identical from one continent to another.
- younger rock layers contained a higher percentage of species still living today than older rock layers
- that some species in older rock layers became extinct and were not found in younger layers.

Sir Charles Lyell published several books, including "Principals of Modern Geology". He is credited with popularizing the concept of Uniformitarianism: the idea that the same geologic forces at work today- the slowly occurring processes of weathering, erosion, and deposition by gravity, wind, water, and ice, as well as rapid events such as floods, earthquakes, volcanoes—were the dominant geologic forces that created and destroyed the Earth's surface during the geologic past = "The Present is the Key to the Past".

Lyell concluded that the Earth's formation required millions of years based on the concept of Uniformitarianism and the sequence of fossil species that appeared and disappeared in the rock record. Lyell's conclusions are based on the fundamentals of science—accurate procedures, observations, data, and conclusions that have been verified by others through time.

Lyell's most notable contribution to science may be in his friendship and mentoring of Charles Darwin. Darwin used Lyell's concept of geologic time and the evolution of fossilized species in the rock record as contributions to the development of his theory of Evolution and publishing "On the Origin of the Species".

As a result of Charles Lyell's initial work, geologists and paleontologists have recorded the relative positions of certain distinct index fossils in specific rock sequences and arranged them in a vertical sequence called the Geologic Time Table.

**[See Figure 2 page 6]**

## II. FOSSIL EVIDENCE FOR PLATE TECTONICS

Alfred Wegener was a German meteorologist, geophysicist and polar researcher. In 1915 he published 'The Origin of Continents and Oceans', which outlined his theory of [Continental Drift](#). The Continental Drift Theory suggested that the continents were originally joined together as one supercontinent called Pangaea then separated into the northern section called Laurasia and a southern part called Gondwanaland. Through geological time these two land masses further separated and moved to their present configurations.

Wegener supported his Continental Drift idea with 5 lines of evidence:

- (1) [Jigsaw Fit](#)- continents fit together like a puzzle
- (2) [Geological Fit](#)-identical rock units are found on opposing continents
- (3) [Tectonic Fit](#)-ancestral mountain range structures continue from one continent to another
- (4) [Glacial Features](#)-glacial deposition and erosion features extend outward across continents
- (5) [Fossil Evidence](#)- identical index fossils, unique to a limited area, are found on opposing continents.

Wegener's Theory of Continental Drift was met with skepticism by many scientists. Although he had a lot of evidence to support the theory, he could not explain how the plates moved. It would be almost half a century before this problem began to be solved with the more comprehensive theory called Plate Tectonics.

Fossils are again able to contribute to the understanding of the Earth's geologic history as supporting evidence for the theory of Continental Drift. There are many examples of index fossils that lived in a limited region and during a short period of geological time but yet now are on separate continents and nowhere else. This suggests that the continents were once joined.

The following examples of specific index fossils lend support to Wegener's Theory of Continental Drift:

- Remains of Mesosaurus, a freshwater crocodile-like reptile that lived during the early Permian (between 286 and 258 million years ago), are found solely in Southern Africa and Eastern South America. It would have been physiologically impossible for Mesosaurus to swim between the continents. This suggests that South America and Africa were joined during the Early Permian.
- Cynognathus is an extinct mammal-like reptile. The name literally means 'dog jaw'. Cynognathus was as large as a modern wolf and lived during the early to mid Triassic period (250 to 240 million years ago). It is found as fossils only in South Africa and South America.
- Lystrosaurus - which literally means 'shovel reptile' - was dominant on land in the early Triassic, 250 million years ago.

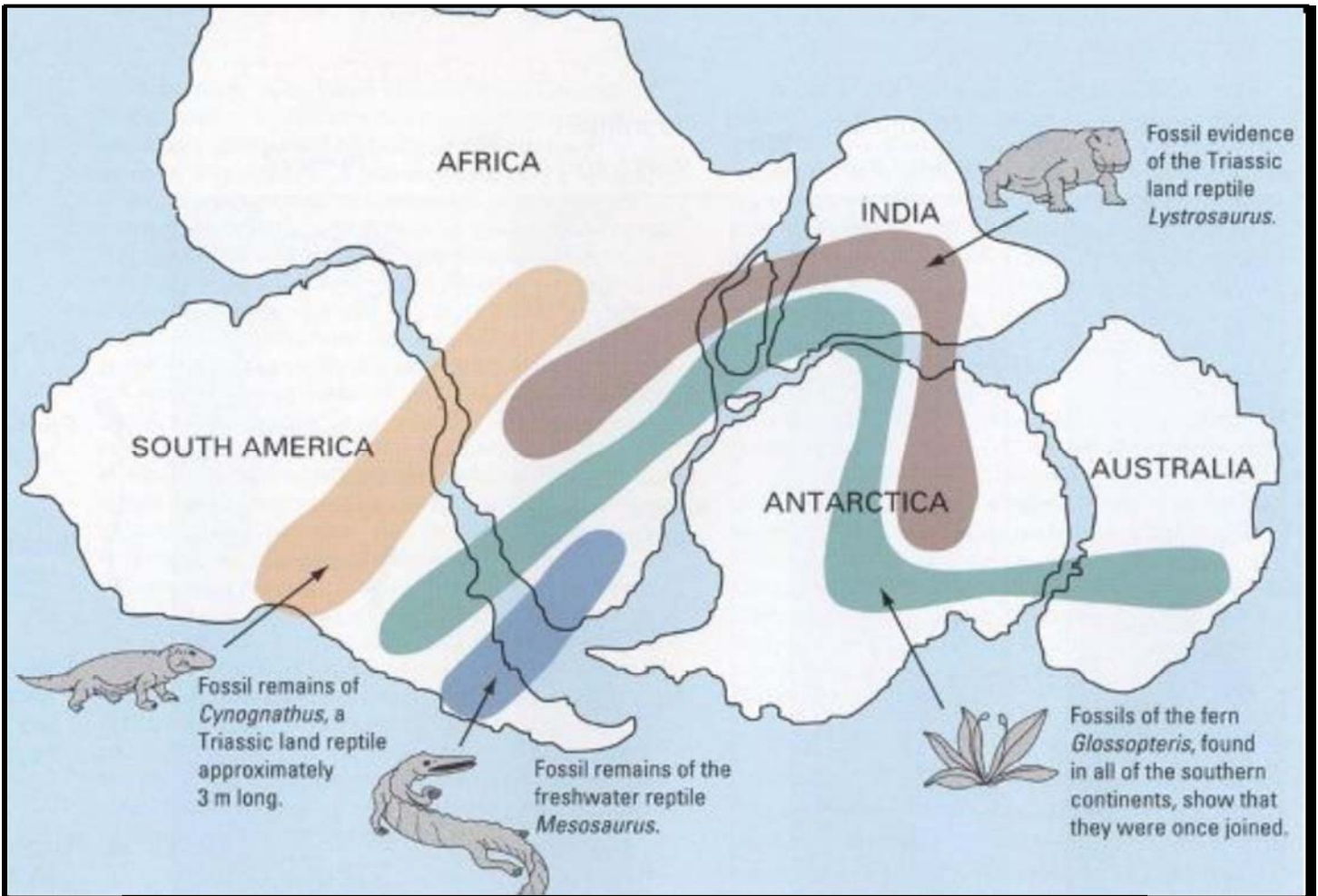
**Continued Page 8**

Figure 2 from "Illustration and Charts from "The Revenant Fossils" from page 2

EON	ERA	PERIOD	EPOCH	Major Geologic & Biologic Events	MYA	
Phanerozoic	Cenozoic	Quaternary	Recent/Holocene	Sumerian civilization (0.006 MY), recorded history Ice Age ends, agricultural development	0 0.01	
			Pleistocene	Equus (horse), Cro-Magnon (0.035 - 0.01 MY) Ice Age begins, Neandertal (0.2 - 0.03 MY), extinction	1.6	
		Tertiary	Neogene	Pliocene	Plihippus, <i>H. habilis</i> (2.5 MY), <i>H. erectus</i> (1.8 MY) Hominids (earliest humans 4.4 MY - <i>Australopithecus</i> )	5.3
				Miocene	Major climatic changes Pigs, camels, cattle, deer, giraffes, merychippus	23.7
			Paleogene	Oligocene	Hominoids (apes), whales Meshippus, basic orders of mammals present	36.6
				Eocene	Hydracotherium, echinoids abundant Whale-like mammal, hyena-like mammal	57.8
				Paleocene	First rodents, rabbits, primates, & carnivores Mammals - small, became larger by late Paleocene	65
			Mesozoic	Cretaceous	Placental & marsupial mammals, mass extinction (end of the dinosaurs) Angiosperm radiation, Pterosaurs, Ornithischian and Saurischian dinosaurs	144
		Jurassic		Plesiosaurs, Ichthyosaurs, Archaeopteryx (bird & reptile characteristics) Cycads (seed bearing tree-ferm/ferm-like leaves)	208	
		Triassic		Gymnosperms diversify, first mammals, Pangaea breakup, mass extinction Conifer-type seed plants, first angiosperms (flowering plants), archosaurs	245	
	Paleozoic	Carboniferous	Permian	Ferns, Pangaea a single continent, largest mass extinction Therapsids (mammal-like reptiles) - possibly warm-blooded	286	
			Pennsylvanian	Seed ferns, Lycophytes, early formation of Pangaea (single land-mass) Reptiles diversified & began displacing many amphibians Abundant coal-forming swamps (mostly spore-producing woody trees)	320	
			Mississippian	Carboniferous coal swamps - most plants as seedless vascular plants Pelycosaurs (finback reptiles - extinct by the Permian) First reptiles, protorothyrids (first amniotic egg-laying stem reptiles)	360	
		Devonian	First amphibians, ray-finned fish, Lungfish, progymnosperms Crossopterygians (fish with paired fins, moved on land, "pre-amphibian")	408		
		Silurian	Cartilaginous fish, bony fish, first fish with jaws, armored jawed fish Acanthodians, Placoderms, Lobe-finned fish, first vascular plants	438		
		Ordovician	Bryozoans, Blastoids First land plants	505		
		Cambrian	Brachiopods, Mollusks, Echinoderms, Trilobites First fish, jawless fish, hard-bodied organisms, Ostracoderms	545		
	Precambrian	Proterozoic	Earliest shelled animals, widespread glaciation, breakup up Rodinia begins, worm-like fossils, Ediacaran fossils Soft-bodied organisms, single continent Rodinia, igneous activity, mid-continent rifting, Grenville orogeny Free oxygen, first red beds, banded iron formations, multicelled algae, prokaryotes, stromatolites, eukaryotes		2500	
		Archean	Late Archean deformation, Canadian Shield, Plutonism (cooling of magma under earth's surface) Formation of greenstone belts & granite-gneiss complexes (igneous & metamorphic rock) Earliest fossil record of life: Algae, cell-like bodies, oldest rocks (Canada)		4000	
		Hadean	Crustal Evolution Detrital zircons (Australia) show crust existed (water present) Earth's origin		4600	

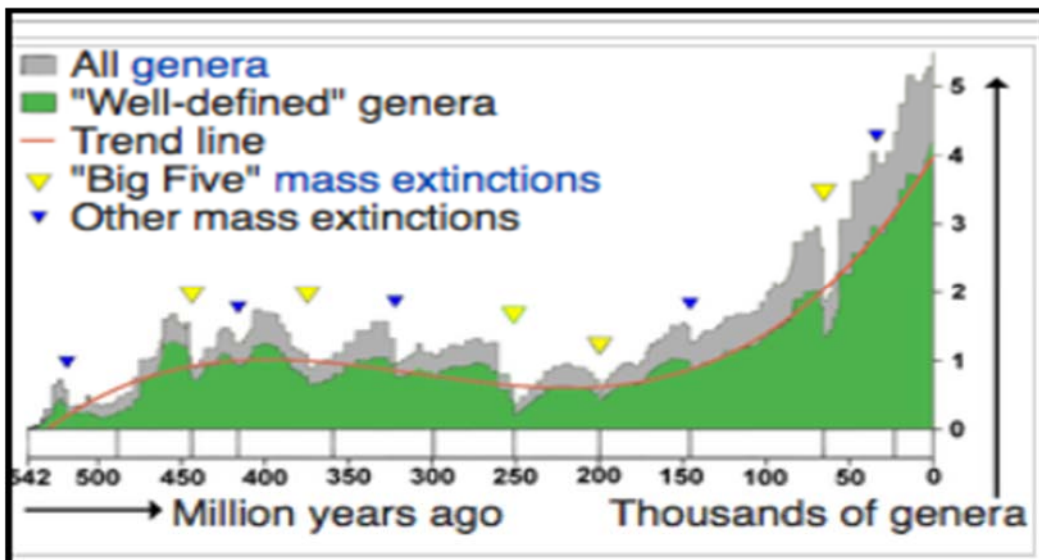
## Evolution of Fossils Through Geologic Time

*Article continued on page 7*



**Figure 3** Index Fossil Distributions supporting the Theory of Continental Drift

**III. THE 5 (6?) GREAT MASS EXTINCTIONS OF FOSSILS THROUGHOUT GEOLOGIC TIME**



**Figure 4** Number of Fossil Genus Through Geological Time (total reflects new Genus + and extinct Genus -)

## **The Revenant Fossils Cont'd from page 5**

It is thought to have been herbivorous and grew to approximately one meter in length, with a stocky build like a pig. Fossils of *Lystrosaurus* are only found in Antarctica, India and South Africa.

- *Glossopteris* was a woody, seed-bearing shrub or tree, named after the Greek description of 'tongue' – a description of the shape of the leaves. Some reached 30m tall. It evolved during the Early Permian (299 million years ago) and went on to become the dominant species throughout the period, not becoming extinct until the end of the Permian. Fossils are found in Australia, South Africa, South America, India and Antarctica.

When the continents of the southern hemisphere are re-assembled into the single land mass of Gondwanaland, the distribution of these four fossil types form linear and continuous patterns of distribution across continental boundaries. **[ See Figure 3, page 7 ]**

Time periods in the history of life on Earth during which exceptionally large numbers of species go extinct are called mass extinctions. These extinctions are quite different from the rate of extinction, which occurs even when the diversity of life is increasing. Many species vanished in five cataclysmic mass extinctions and **today, 99.9 percent of all species that have existed on Earth are extinct.** **[ See Figure 4 Page 7 ]**

**1. The Ordovician-Silurian Extinction** occurred about 439 million years ago due to a drop in sea levels as glaciers formed followed by rising sea levels as glaciers melted. During this extinction 25 percent of marine families and 60 percent of marine genera (the classification above species) were lost.

**2. The Late Devonian Extinction** took place somewhere around 364 million years ago. To this day its cause is unknown. However, evidence supporting the Devonian mass extinction suggesting that warm water marine species were the most severely affected in this extinction event, has lead many paleontologists to believe that an episode of global cooling, similar to the event which that may have resulted in the Ordovician-Silurian mass extinction, may have lead to the Devonian extinction. Thus this theory suggests that the

extinction of the Devonian was triggered by another glaciation event on Gondwana, which is evidenced by glacial deposits of this age in northern Brazil.

Similar to the late Ordovician crisis, agents such as global cooling and widespread lowering of sea-level may have triggered the late Devonian crisis. Scientists have also suggested that meteorite impacts may have been possible agents for the Devonian mass extinction, but the data in support of a possible extra-terrestrial impact remains inconclusive, and the mechanisms responsible for the Devonian mass extinction are still under debate. What is known, however, is that this mass extinction killed 22 percent of marine families and 57 percent of marine genera.

**3. The Permian-Triassic Extinction** happened about 251 million years ago and was Earth's worst mass extinction. 95 percent of all species, 53 percent of marine families, 84 percent of marine genera, and an estimated 70 percent of land species such as plants, insects and vertebrate animals were killed during this catastrophe. Direct evidence for this period has not been found but many scientists believe a comet or asteroid impact led to this extinction. Others think that volcanic eruption, coating large stretches of land with lava from the Siberian Traps, which are centered around the Siberian City of Tura, and related loss of oxygen in the seas were the cause of this mass extinction. Still other scientists suspect that the impact of the comet or asteroid triggered the volcanism.

**4. The End Triassic Extinction**, taking place roughly 199 million to 214 million years ago, was most likely caused by massive floods of lava erupting from the central Atlantic magmatic province triggering the breakup of Pangaea and the opening of the Atlantic Ocean. The volcanism may have led to deadly global warming. Rocks from the eruptions now are found in the eastern United States, eastern Brazil, North Africa and Spain. 22 percent of marine families, 52 percent of marine genera, and an unknown percentage of vertebrate deaths were the result.

**5. Finally, the Cretaceous-Tertiary Extinction** occurred about 65 million years ago and is thought to have been aggravated, if not caused, by impacts of

several-mile-wide asteroids that created the Chicxulub crater now hidden on the Yucatan Peninsula and beneath the Gulf of Mexico. Yet, some scientists believe that this mass extinction was caused by gradual climate change or flood-like volcanic eruptions of basalt lava from the Deccan Traps in west-central India. During this extinction, 16 percent of marine families, 47 percent of marine genera, and 18 percent of land vertebrate families including the dinosaurs.

**6. A 6<sup>TH</sup> MASS EXTINCTION??** As unbelievable as it may sound, after having read through the five mass extinctions, the sixth mass extinction is in progress, now, with animals going extinct 100 to 1,000 times (possibly even 1,000 to 10,000 times) faster than at the normal background extinction rate, which is about 10 to 25 species per year.

**Many researchers claim that we are in the middle of a mass extinction event faster than the Cretaceous-Tertiary extinction which wiped out the dinosaurs.**

Rather than a meteorite or large volcanic eruption, the alarming decline of biodiversity (diversity of species on earth) leading to the current mass extinction is the results of five major human activities:

- ◆ Habitat destruction including human-induced climate change. Human-induced climate change is the result in high amounts of greenhouse gas emissions (primarily carbon dioxide, methane, and nitrous oxide). Acting like a greenhouse, these gases trap heat from the sun. Other human activities such as habitat destruction in combination with climate change are making the situation only worse. Increasing temperatures may force species to move toward their preferred, and generally cooler, climate range. Thus, if those habitats have already been destroyed, then the species are not able to escape the climate change and will go extinct.
- ◆ Invasive species. Invasive /alien species displace native species through predation, competition, and disease organisms.
- ◆ Pollution
- ◆ Human overpopulation

**The Revenant Fossils concluded page 9**

**MAR 2016 JADE STATE NEWS**



## The Revenant Fossils from Page 8

- ◆ Over-harvesting (hunting, fishing, and gathering).

**The entire Earth is impacted by this ongoing biological catastrophe. Can the people of the Earth cooperate enough to protect the Earth such that future generations of people can survive? After all people (Homo Sapiens) are animals who could join the long list of extinct species and become part of the revenant fossil record!?**

### REFERENCES:

1. "Alabama Fossils Have A Hand In Understanding World's History" by Ben Raines  
AL.Com-Press Register-November 26, 2015
2. Figure 1- <https://www.fossilera.com/>
3. <http://www.geolsoc.org.uk/Plate-Tectonics/Chap1-Pioneers-of-Plate-Tectonics/Alfred-Wegener/Fossil-Evidence-from-the-Southern-Hemisphere>
4. Figure 2- <http://www.sunstar-solutions.com/floodgeology.htm>
5. Figure 3 – <http://www.geolsoc.org.uk/Plate-Tectonics/Chap1-Pioneers-of-Plate-Tectonics/Alfred-Wegener/Fossil-Evidence-from-the-Southern-Hemisphere>
6. <http://www.endangeredspeciesinternational.org/overview.html>
7. Figure 4- [https://en.wikipedia.org/wiki/Extinction\\_event](https://en.wikipedia.org/wiki/Extinction_event)

### **"Olive" A 50 Million year old Primitive Horse Ancestor From The Green River Formation –Kemmerer, WYOMING**

In the spring of 2015 the Eocene aged Green River Formation near Kemmerer, Wyoming yielded another amazing fossil discovery. A fully articulated primitive horse ancestor, since nicknamed "Olive", was found by brothers Mark and Mike Oliver. While this locality is known world wide for it's amazingly preserved fish fossils, they immediately knew they had discovered something very different and special. Their first move was to call in expert help.

[Jason Cooper](#) (who recently discovered "[Elvis](#)", the first complete [Torvosaurus](#)), along with Brock Sisson of Dinosaur Dynasty were able to lend a hand. They share over 30 years to experience dis-

covering, excavating and preparing a broad range of fossils. While the Olivers knew they had something special they didn't immediately know what it was. Jason and Brock were able to quickly determine that they had discovered a primitive horse ancestor, only the second one **EVER** found in the Green River Formation.

Given the massive amount of rock that has been quarried from this formation in search of fish fossils over the decades, this makes Olive an incredibly rare find. It's discovery is much rarer than say finding a T-Rex. The other specimen was discovered about a decade ago. Its location is currently unknown, though according to the stories it is unfortunately locked away from the public in a bank vault for insurance reasons.

After discussing the importance of this find with the Oliver brothers, Jason and Brock were given permission to excavate the find. Over the next three days, and with great caution and diligence, they removed the 22 inch animal from the eroding hillside of the quarry.

It wasn't entirely clear how complete the animal was until they got it back to the lab and were able to x-ray the specimen. Not only did this tiny horse-like animal prove to be essentially complete, but showed great articulation, most importantly in the feet. The foot structure along with the skull is one of the most important aspects for describing horses. Based on initial observations it may represent the genus *Sifrhippus* but a formal study is needed. **[See Figure 1 Below]**

FIGURE 1: DETAILED FOOT STRUCTURE OF "OLIVE" THE ANCESTRAL HORSE [Below left photo]

Given the importance of this fossil and



Figure 1

it's detailed features they enlisted the help of Ben Cooper of the Cincinnati based American Paleo Company for the preparation of Olive. Ben is internationally renowned for his fossil preparation skills, particularly on finely detailed trilobites. His work can be found at such prestigious institutions as the American Museum of Natural History (AMNH) in New York, The Houston Museum of Natural Science (HMNS), and the Cincinnati Museum of Natural History. This expertise in preparing fossils at a microscopic level was well suited to this task of preparing Olive as it allowed him to preserve even the most minute details; Details which might have been lost at the hands of a less experienced fossil preparator.

Ben spent the next 8 weeks working full time on the preparation of this 22 inch long fossil. Not only did Ben free the primitive horse from its surrounding stone, but he left a number of fish fossils on the natural matrix, paying homage to Olive's watery demise at the bottom of Fossil Lake.

By late July the group was finally content with their achievements and Olive was ready too for the photographer and her public debut. So now, with great pride, may we present Olive, a fossil that not only holds a great potential for research into horse ancestry but shows a tremendous beauty even after nearly 50 million years. **[ SEE FIGURE 2, Below]**



Figure 2

## A ROCKHOUND IN THE BIG APPLE

By Bill Tabacinski, a member of the Cody 59ers Rock Club, Cody, Wyoming

When Roger asked if I would give a talk to the Rock and Mineral Club I let him know right away that I wasn't an authority on the subject like the other distinguished guest speakers that have been at our meetings. Instead my talk would be centered on how I became interested in rocks and minerals as a young boy growing up in New York City.

I am a baby boomer. I was born in 1948 after my Dad, along with millions of other servicemen, returned from WWII. Though the economy and jobs were on an upswing, finding a place to live wasn't so easy. All over the country newly married couples were looking for places to live, and the housing industry was just beginning to kick into high gear. For the first four years of my life I lived in a two bedroom, one bathroom apartment with my Mom and Dad, my Grandmother and Grandfather and an Aunt and Uncle.

As a veteran with a modest salary and a new family my father qualified for a rent controlled apartment in one of the new housing developments called "projects" that were being built in NYC. When I was 5 years old, we moved into the Marble Hill Project in the Bronx. Little did I know at the time that it was named for one of the primary rock formations in New York City. We kids thought it was named after the games of marbles we use to play at the base of the hill. The development was composed of 6, 15 story buildings with 15 apartments on each floor. It had a chained off circle of grass with a few trees; a small kiddy playground and benches around a flagpole but no ROCKS. Every square inch of the ground available to a child was covered by asphalt, concrete or cobblestone.

I was 6 years old when I first stepped on natural ground. My Mom, Dad, baby brother and I went on a picnic at Bear Mountain Park upstate from the City. It was a hot, August day and the stream that fed the lake was only a trickle. I spent the entire day by myself sitting in the streambed examining rocks and breaking them open to see the differences inside and washing them in the water. Before we left I stuffed my pockets full of my favorites. A rock hound was born that day.

Though my parents had little more than elementary school educations, they were determined that their children succeed in school. During summers my Mom took me to the library every week. I had my own library card and could read fairly well by first grade. I had also found out that there were actually books about rock and minerals and that the rocks had different names. What a thrill it was in 4<sup>th</sup> grade when the subject of geology came up in school. I knew more than the teacher and earned

the easiest A's of my life.

By the time I was in 6<sup>th</sup> grade I began to explore the city beyond my East Bronx neighborhood on my own. I learned how to use the public bus and subway systems and started to expand my areas of exploration. It was about this time that a life-changing event, some might call an epiphany, occurred in my life. While browsing in a neighborhood bookstore I came upon a copy of the Golden Nature Series', *Rocks and Minerals, a Guide to Minerals, Gems and Rocks with 400 illustrations in color*". This little one dollar book by Dr. Herbert S. Zim had a profound influence on me. The book explained about collecting rocks and minerals, the equipment needed, identification and the labeling and display of specimens. It also included the following statements that gave me hope that even though I lived in NYC I could be a rock hound: "Manmade exposures of rock and minerals are often the best source of specimens. Look in road and railroad cuts, rock pits and dump piles. Be alert for new roads, bridges or foundations where excavations expose fresh rocks." As I left the bookstore with my new purchase, the background noise of busses, car horns, police sirens and the clash and screech of the overhead trains was all blotted out for a second by a deep rumbling sound that I could actually feel through my feet as the sidewalk trembled. I stuffed my book in a rear pocket and headed up a side street where a faint cloud of dust was rising. Behind a diner, surrounded by fencing, was what had been a vacant lot. Men in coveralls and hardhats were using a bulldozer and muscle to remove a mat of old tires and steel cables that had been used to contain the debris from the dynamite blasts they were setting off to the prepare the foundation of a new building. Not 5 minutes ago I had read to be on the lookout for just such an occurrence. No entry was allowed into the site by day, but at night, surrounded by barricades but lit by the flickering, yellow flames of the warning flares that looked like black cannonballs, I returned and filled an old canvas bag with specimens of the marble that my housing project was named for. So began my quest for rocks and minerals in the Big Apple.

I knew no one else who did this. With the only sources of information available to me being the Museum of Natural History and the local library, I was on my own and had some interesting experiences, and at times, difficulty explaining to people what I was doing. Getting my equipment together was a good example of this. When I was a kid Army and Navy stores still actually sold a lot of old Army and Navy stuff. My choice of a collecting field bag was US Army issue from the Spanish American War. It had that great musty canvas smell, and it might even have been on San Juan Hill with Teddy Roosevelt. My uncle Benny gave me a couple of rusty, cold chisels and an old

tackle box to store my growing collection. My Dad lent me a pair of work gloves and gave me his WWII canteen. A kindly, Scoutmaster who was a jeweler by trade, gave me a folding magnifier. Unfortunately, what I really lusted for and what no one could give me was a geologist's pick. It took 3 months of scrounging for bottles to turn in for the deposit before I earned enough money to buy one. Dr. Zim, the author of the book, said to get a good one. I went into our local hardware store at least twice a week for 3 months to look at the Estwing pick hanging high up on the wall. Then, as now, it was a pricey item. When I had the money in my pocket I asked the salesman to let me handle it. He had two questions before he took it off the wall: "Do you know how much this cost?" and "What are you going to do with it?" I was 12 years old, and I guess I gave him the right answers. Even so, he wrapped it in paper and tied it with string before he let me leave with it.

Now my collecting expeditions began in earnest. Highway and railway cuts, bridges and retaining walls had their risks but yielded some surprising additions to my growing collection. I quickly learned how to get across multi-lane highways, avoid the third rails and how to flatten against a tunnel wall when the trains went by. I came upon hobo camps and learned to avoid winos and hopheads. Seawalls, jetties and bridge abutments contained specimens trucked in from different locations and provided their own unique challenges to access. It was while exploring demolition sites that I made an important discovery. In addition to the native rock exposed at such sites there was often a plethora of specimens that came from the building materials themselves. Brownstone, sandstone, slate, marble, granite and even fossiliferous limestone could be found in rubble piles and cellar holes. From this discovery it was a small, but near fatal step toward the temptation to collect from standing structures. After a few close calls and a reluctance to be remanded to the NYC Juvenile Justice System, I ceased my attacks on cemeteries, stairs, cobblestone curbing, bank facades, the Empire State Building and Grant's Tomb. Ironically it was after I decided to "go straight" and ceased defacing buildings and infrastructure, that I had more run-ins with NY's finest.

One day when I was scheduled to take an algebra test I knew I was going to fail, I skipped school to go rock hunting. I stowed my gear, lunch and water in my pack and took the city bus to the Bronx's Van Cortland Park. From where I got off the bus I had to cross open athletic fields to get to a hilly part of the park that had exposed bedrock. I almost reached it when what did I hear but the sound of horse hooves coming up behind me. I turned around to face a policeman on horseback. The first thing he said to me was: "Why ain't you in school?"

## ROCKHOUND IN THE BIG APPLE

*Continued from page 10*

And before I could even answer: "What's in that bag?" I turned and ran toward a steep wall of rock we kids called Korea's Pork Chop Hill. I knew if I made it the horse couldn't follow. I made it to the top; the horse couldn't and the cop wouldn't leave his mount unattended to chase me on foot. He did swear at me a lot.

Another time, I took the subway from the Bronx, downtown to Central Park in Manhattan. It has some natural rock formations that its designer, Frederick Olmstead, worked into his design plans. There are places you can see glacial scratches in the bedrock. I was in a semi-secluded spot, chiseling away when an officer came up to me and asked what did I think I was doing. Not having any better answer or avenue of escape, I told him I was a rock hound collecting specimens of gneiss and schist. After giving me a quizzical look he replied with an Irish accent: "Sure, Sure! I bet its great shit." Now beat it and don't let me be catchin' you here with that hammer again!"

Eventually, I became interested enough to want to learn more about the geological history of NYC. Some of the things I learned is that the bedrock of NYC is very ancient, going back a billion years. The three basic strata are Manhattan schist, Inwood marble and Fordam gneiss. They have been intensely folded, over-thrusted, pushed up, eroded, buried by sediment and exposed by glacial scouring. It is very geologically complex area. Tall buildings in Manhattan are built where there is solid bedrock. The cheapest land, years ago, was rocky, terminal moraine left by a glacier and was used extensively for smaller buildings, cemeteries and parks. The Wisconsin Ice sheet was a thousand feet thick in NYC. It began retreating 18,000 years ago. While here it carved out the Great Lakes, deepened the Hudson River Valley, smoothed out the bedrock and left striations when it dragged rock over the surface. When it retreated, it left behind odd isolated boulders called glacial erratics. I collected specimens of these rocks and observed evidence of these phenomena during my boyhood days growing up in the Bronx. It was an exciting adventure for a youngster and initiated me into the wonders of nature and the outdoors, as well as, teaching me valuable survival skills in an urban environment.

As I grew older, events in my life took me out of NYC. I have been fortunate to be able to travel and enjoy rock collecting in all 50 states. The interest in the natural world that I first developed as a child picking up shiny stones directed me down a

career path and helped develop my values and philosophy of life. Thank you for letting me tell my story. If anyone is interested I have brought with me my equipment and a portion of my childhood collection of specimens.

**\*\*\*All rights reserved. No part of this short story may be used or reproduced in any manner whatsoever without written permission of the author. (Article edited with permission for JSN)**

### Rocky Mountain Federation of Mineralogical Societies, Inc. 2016 Annual Report for: Public Lands Access Committee

Wyoming is seeing a lot of activity from the environmental groups who are trying to close all roads in the National Forests and create "Wilderness Areas". Attending meetings of the Forest Service has made this very clear.

Negating the effects of the environmental groups will require the efforts of all the clubs in our member States (actually, all clubs in the country) to make comments to the governmental agencies as the environmental groups are already doing. Their members, from all over the country, comment on as many agency activities as they can and as a result, the agencies end up with hundreds or even thousands of comments from all over the USA.

Attending local meetings is key to counteracting the environmental groups input to the agencies. If you don't attend, you won't know what is happening and the government only hears one side! The environmental groups have maps of what they want to do with "Public Lands"!

If rockhounds want to continue to collect rocks, they are going to have to COMMIT to getting involved with the government agencies and attending meetings!

It is impossible for one or two individuals to cover an entire State, even if there were adequate funding. To keep "Public Lands" open for rockhounding, requires the participation of ALL Rockhounds in the processes.

Respectfully submitted by:

**Rich Gerow,**  
Wyoming Representative

# Lapidary tips

## SAWING BOOK ENDS by Lew Birdsall

Making book ends out of rough rock presents a challenge to saw two sections that will match without large adjustments. Sometimes the order of sawing the three major surfaces (front –adjacent sides-bases) will assure a fit. At other times we must saw precise angles between these surfaces. Otherwise, the sections will need re-sawing or lapping to fit. For example, if side to base angles are 89°, instead of 90°, a six inch book ends touching at the base will be 3/16" apart at the top! Even when the order of sawing doesn't require 90° angles for matching sections, the main surfaces should be nearly perpendicular for good appearances, unless special effects are desired.

Let's assume that for each situation considered we will make a set of book ends out of an appropriate water worn chunk of material. The two sections may be positioned in the rock with vertical side together or front faces together or base-to-base. Then there are six possible orders of sawing these three surfaces. Any other relationship will require some ingenuity.

**Bases:** To saw bases for sections to match, place them face-down and side-by-side on a flat surfaces on the carriage. You can use a thin strip of plywood between the sides and a backup piece to reduce chipping when the blade cuts through. The tops, outer sides and backs of the book ends may be cut or left rough.

**Side by Side:** The sections side-to-side of the rock can be sawed in any order into two matching pairs- If your saw is big enough and the rock can be clamped, the clamp the two pieces to be sawed together, then slab the front and back, then line the rock to cut it in the center, This could apply to sawing a round of silicified wood.

**Shaping:** If the rock was sawed into a square block, you may want to cut the square end off at an angle on each end, left and side sides of your book ends, Use a carpenter's combination square to plumb the work with the blade. Small flat or tapered pieces of wood are helpful in clamping. Re-check the set up after adjusting the cross feed. In summary, planning and careful preparation are essential for sawing a set of book ends. This initial effort will reduce the amount of corrective work otherwise needed for a perfect match.

(Reference: Article with exerts from: *Owyhee Gem*, 4/1992 via *Beehive Buzzer*, January, 1992)

Lapidary Tips *Continued page 12*

## Tumbling:

Use a soap rinse between the 3rd cycle and polish, then after the final polish. Bar Ivory soap is the only pure soap we know of. Chemical additives in other soap and detergents seem to leave a residue on the stones. The dark color when this soap rinse is poured off shows how much grit were still on what you thought were clean stones. Shave the bar with a knife or whatever method you wish. The water-soap combination reaches a balance when little bubbles appear on the surface of the moving material and should remain this way throughout the soap cycles. The soap bubbles provide a cushion for the stones. Excess water slows down the process.

*(From The Rockhound Gazette, 02/97 via The Ammonite-May 2015)*

## SHOP TIP: CLEANING DRUZY QUARTZ SPECIMENS:

To clean and shine most druzey specimens, use Easy Off oven cleaner (fume free is OK). Spray the specimen and then leave it overnight in a closed container or bag before rinsing. This even works on iron stained quartz crystals. Using disposal gloves is a great idea when cleaning with chemicals. *(The Tumblers, 5/2008 via Tidewater Prospector, 2/2009 VIA 2012 Newsletter via Jade State News- 5-2013)*

## FBI Agent

A rancher was minding his own business when an FBI agent came up to him and said, "We got a tip that you may be growing illegal drugs on the premises. Do you mind if I take a look around?"

The old rancher replied, "That's fine, you shouldn't go over there though." As he pointed at one of his fields.

The FBI agent snapped at him, "I'm am a federal agent! I can go wherever I want!" With that he pulled out his badge and shoved it into the ranchers face.

The rancher shrugged this off and continued with his daily chores. About 15 minutes later he heard a loud scream from the field he had pointed out earlier. All of a sudden he could see the FBI agent sprinting towards him with a large bull on his heels.

The rancher rushed to the fence and yelled, "Your badge! Show your badge to the bull!"

*Submitted by [Leoqal](#)*

*Courtesy of Joke of the day*

# CLUB NEWS AND ANNOUNCEMENTS

## Shoshone Club Programs and specialty field trips

### 2016

- Wed., Jan. 13 Show and tell, Items of art, craft or other from lapidary material
- Tues., Feb. 9 NO PROGRAM THIS MONTH, instead, please attend the Wed. Feb. 3<sup>rd</sup> program by Cliff Manuel, "Bighorn Basin Dinosaurs, & Other Fossil Discoveries", Northwest College, Fagerberg Bldg., Rm 70, 6:30 pm-8:00 pm. FREE!
- Tues., March 8 Jade by June Rich, please bring in show and tell items of any jade you may have.
- Tues., April 12 SRC - 65<sup>th</sup> Anniversary potluck at the Homesteader Museum (pending approval) with Speaker Beryl Churchill
- Mon., May 2 Field trip sponsored by Powell Valley Community Education, cost \$59.00, early registration, as van has limited seating. (Call for more info 754-6469). World renowned site, Legend Rock Petroglyphs, roughly between Meeteetse & Thermopolis. 9am-5pm.
- Tues., May 10 Bring in items and set up club display case for WSMGS state rock and gem show in Torrington, WY June 25 & 26, 2016. Theme to be announced later.
- Sat., May 14 Gary Olson will conduct a lapidary class at his home, showing how to make cabochons, etc. 1:00 PM
- Tues., June 14 Speaker, geologist, Gretchen Hurley, of the Bureau of Land Management – Natural Trap Cave, in the Big Horn Mtns. northeast of Lovell
- Tues. July 12 Speaker, Mr. Clarence "Doc" Ellis, of Clark, WY
- Sat., Aug. 13 Club potluck picnic, at 5 Springs recreational campground, on 14A, at the base of Bighorn Mtn. out of Lovell
- Tues., Sept. 13 Game-Identify (and or learn) WY minerals, rocks and fossils, by Linna Beebe
- Tues., Oct. 11 Elections and Identifications, please bring in rocks, fossils or minerals that are unidentified by you and knowledgeable members will try to assist.
- Tues., Nov. 8 Silent Auction, please bring in any rock, mineral or fossils you are willing to share and members & guests will bid on those items. Funds to be used for club functions
- Tues., Dec. 13 Christmas potluck with a trading of rocks, fossils, or other, between members

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# WYOMING STATE MINERAL AND GEM SOCIETY, INC.

## 2016 CLUB DIRECTORY

Information subject to change; updates will be posted upon notice  
Please contact the Editor with any changes at: [jsn@wsmsg.org](mailto:jsn@wsmsg.org)

### **Cheyenne Mineral & Gem Society:**

**Mail:** P.O. Box 21412, Cheyenne, WY 82001  
**Email:** [cheyennemgs@wsmsg.org](mailto:cheyennemgs@wsmsg.org)  
Meets Sept. – May 2nd Wednesday 7:00 p.m. LCCC Health Science Bldg., 1400 E. College Dr., Room 309, Cheyenne  
[Google Map](#)

President: Donna Arnold  
Treasurer: Jan Shively

### **Cody Fifty-Niners Rock Club:**

**Mail:** P.O. Box 1251, Cody, WY 82414  
**Email:** [cody59ers@wsmsg.org](mailto:cody59ers@wsmsg.org)  
Meets 4th Thursday 7:00 p.m. Park County Courthouse, Cody  
[Google Map](#)

President: Ron Bice  
Vice-President: Joy Lyons  
Treasurer: Roger Lyons  
Secretary: Linda Jennings  
JSN: Linda Jennings  
Historian: Jackie Platt  
Club Web site: [www.Cody59ers.com](http://www.Cody59ers.com)

### **Natrona County Rockhounds:**

**Mail:** P.O. Box 123, Casper, WY 82644  
**Email:** [natronarockhounds@wsmsg.org](mailto:natronarockhounds@wsmsg.org)  
Meets 1st Thursday 7:00 p.m. Clubhouse, 5211 Rambler, Mills, Casper  
[Google Map](#)

President: Mac Goss  
Vice-President: John Hines  
Treasurer: Jennifer Flowers  
Secretary: Samantha Hansen

### **Rex Young Rock Club:**

**Mail:** 112 East 3rd, Lingle, WY 82223  
**Email:** [rexyoungrockclub@wsmsg.org](mailto:rexyoungrockclub@wsmsg.org)  
Meets 2nd Wednesday 7:00 p.m. Senior Center, 216 E. 19th, Torrington  
[Google Map](#)

President: Kim Nielsen  
Vice-President: Sherman Lenhart  
Treasurer: Leroy Meiniger  
Secretary: Joyce Trowbridge  
JSN: Joyce Trowbridge  
Historian: Joyce Trowbridge

### **Riverton Mineral and Gem Society:**

**Mail:** P.O. Box 1904, Riverton, WY 82501  
**Email:** [rivertonmgs@wsmsg.org](mailto:rivertonmgs@wsmsg.org)  
Meets Sept.–May 2nd Monday 7:00 p.m. 303 E. Lincoln, Riverton  
[Google Map](#)

President: Alice Gustin  
Vice-President: Cathy Cline  
Treasurer: Melvin Gustin  
Secretary: Kim Brown  
JSN: Kim Brown Club Web site: [www.RivertonMGS.com](http://www.RivertonMGS.com)

### **Shoshone Rock Club:**

**Mail:** P.O. Box 256, Powell, WY 82435  
**Email:** [shoshonerockclub@wsmsg.org](mailto:shoshonerockclub@wsmsg.org)  
Meets 2nd Tuesday 7:30 p.m. Powell Library, 317 E. 3rd Street, Powell  
[Google Map](#)

President: Gary Olson  
Vice-President: Mary Vogel  
Treasurer: Linna Beebe  
Secretary: Linda Thomas  
JSN: Linna Beebe  
Historian: Linna Beebe

NCRC present the 69th annual

# Gem & Mineral Show

**July 9-10, 2016**

Sat 9-5 Sun 9-4

Admission \$3 under 12 free

**Parkway Plaza**

123 West E st, Casper WY

**Raffle:** *Amethyst Cathedral plus more*

**Silent Auctions:** *WY rocks in the ruff*

**Door Prizes:** *\$10 rockhound bucks*

**Demonstrations:** *Gem Faceting,  
Flint Knapping & Primitive Stone Tools,*

*Enter e-mail for 1 free raffle ticket*

e-mail: \_\_\_\_\_  
used to notify of upcoming NCRC events only



**Actual Raffle  
Item  
14" tall**

## Gems of Wyoming

Contact info. 307.277.7175 [jlflowers@xmc.com](mailto:jlflowers@xmc.com)

# **2016 Wyoming State Gem & Mineral Show**

**Ron Harroun Memorial Show Presents**

## **Wyoming's Ancient Sea Life**

**GOSHEN CO. FAIRGROUNDS  
RENDEZVOUS CENTER  
HWY. 26/85 W. TORRINGTON, WY**

**June 25<sup>th</sup> & 26<sup>th</sup>, 2016**

Hosted by the "Rex Young Rock Club"

Silent Auction--Demonstrations  
Dealers--Displays--Raffles

**SATURDAY 9 A.M. TO 6 P.M.**

**SUNDAY 10A.M. TO 4 P.M.**

Admission: Adults \$2 per day

Children under 12: free when accompanied by paid adult

**For more information contact:**

**Kim Neilsen 602-209-3918 or 308-632-2385**

**Dale Tikalsky 308-631-7814 or rockhound0720@hotmail.com**

**JADE STATE NEWS  
WYOMING STATE MINERAL  
AND GEM SOCIETY  
VERNE ORCUTT—EDITOR  
P.O. BOX 697  
CODY, WY 82414  
JSN@WSMGS.ORG  
PUBLISHED QUARTERLY :  
NEWS SUBMISSION  
DEADLINES FEB 1, MAY 1,  
AUG 1, NOV 1**

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SITE  
WSMSG.ORG**

