

# YBRA UPLIFT



Issue 22

Annual Newsletter of the Yellowstone-Bighorn Research Association ([www.ybra.org](http://www.ybra.org))



**Scenes from YBRA** (top left to bottom right): Marv Kauffman receiving the Russ Dutcher Award for outstanding service to YBRA; Jeanette celebrating 40 yrs (!!) at YBRA with family and friends; Greg and Peggy Creasy helping prepare breakfast; Univ, of Houston YBRA course on the "death march"; wildflowers at camp; Evan Lavery, our new Membership and Social Director



## Celebrating 80 Years!

*From the President,*

In 2016, YBRA celebrates its 80<sup>th</sup> year of supporting field education and research in the Earth Sciences! This is an amazing accomplishment. We have built an outstanding legacy manifested in the lives and careers of thousands of students and numerous research studies on the natural environment of the northern Rocky Mountains. We can all take pride in achieving this milestone.

I am pleased to report that YBRA's success story emphatically continues. In 2015, we likely reached record numbers of people hosted at camp and revenues generated, and were able to advance several important initiatives that began around 2011, our 75<sup>th</sup> anniversary. Over 360 people stayed in camp, about 225 of which were students in 7 university courses, and operating revenues were approximately \$150,000 (see 2015 Financial Summary). Numbers for 2016 are projected to be somewhat higher for both camp users and revenues. The downside of all this business is that we briefly exceeded our lodging and dining capacity in 2015 and again this year. This situation puts a great deal of strain on our camp staff and facilities, which hopefully in the future will be reduced by tighter scheduling and the addition of a new student dormitory.

Our outreach efforts in 2015-2016 made big strides both at the local and national levels. We continue to annually host an Open House for the Red Lodge community that attracts 30 - 75 attendees, and participated for the first time in the Red Lodge Fun Run for Charities sponsored by the Red Lodge Area Community Foundation. Additionally, this year we donated a "dig for dinosaurs" excursion (courtesy of the New Jersey State Museum group) to the silent auction of the Red Lodge-Billings Clinic Foundation Ball. For the first time since our 50<sup>th</sup> anniversary, YBRA had a "float" in the 2016 Red Lodge Fourth of July Parade. Around 30 students wearing YBRA T-shirts and chanting impromptu "rock songs" rolled through town in front of hundreds of people! It was great fun. Through these efforts of local YBRA members we are increasing community awareness of our organization and story.

At the national level, YBRA advertised via display booths at the 2015 national meeting of the Geological Association of America in Baltimore, and at the 2016 national meeting of the American Association of Petroleum Geologists in Calgary. New advertising material developed for this outreach activity included a table skirt, vertical banner, revamped brochure, and a PowerPoint slide program. Our presence at professional conferences already has helped spread the YBRA story and reconnect with alumni. Look for us at future meetings and stop by for a visit.

The 2015 YBRA Alumni-Industry Symposium built on the success of our first event the previous year.

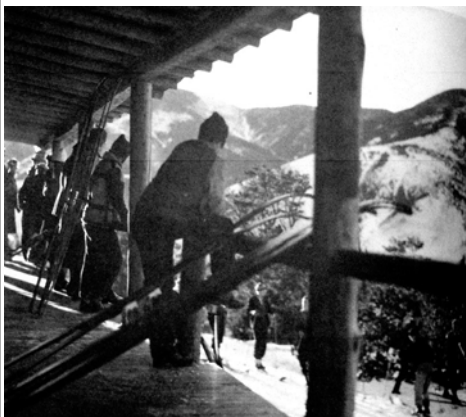
About 45 alumni, supporters, and community members gathered in the lodge for hors d'oeuvres prepared by Jeanette and her staff, an afternoon of excellent presentations, and a cocktail hour. The agenda for the 2016 symposium is reproduced on page 6. These symposia are both educational and an important venue for networking with alumni and professionals in industry, government and academia.

We are also gaining momentum in our fundraising. External donations and membership contributions totaling almost \$19,000 were received for the year ending in July, 2016, up from about \$15,000 the previous year. This revenue source is a critical component in our ability to maintain and upgrade the camp facilities. Because of these funds we are on the verge of adding a bathroom - utility room to the lodge for staff use, a long overdue and much needed upgrade. Moreover, funds and commitments to build a student dormitory, named in honor of Russ Dutcher (the "Dutcher Dorm"), now total almost \$40,000. A recent contractor estimate put the price tag at \$65,000 and a fund-raising push is underway to reach this goal. Information for contributing to YBRA is on page 6 of this newsletter, included with the proxy, and on our website, [www.ybra.org](http://www.ybra.org).

All of these activities are increasingly powered by communications by e-mail and through our website, LinkedIn, Facebook, and website blog outlets. Follow us through these media, enjoy YBRA news stories, and offer us feedback. Be sure to provide us your e-mail address to update our records, if you haven't already done so, and make sure to send in your proxy and dues, and, if possible, donations, before **September 30, 2016** (see details on p. 6 and proxy form).

Over the past 80 years, YBRA has had exceptional success in fulfilling its educational, research, and outreach mission. We understand that YBRA members are at the core of this success and with our continued efforts we can ensure YBRA thrives for another 80 years!

Richard Fifarek....  
[rhfifarek@gmail.com](mailto:rhfifarek@gmail.com)



Skiing from porch of YBRA lodge, 1939 - 1940 (from "Skiing Red Lodge: Dead Man's Curve to Grizzly Peak" by Edwards and Masters, 2010).

## From the Camp Manager...

Time to have another great summer at **YBRA**. Improvements to the camp and cabins continues every year. Our tree and brush thinning, war on weeds, replacing needed roofs, and other infrastructure projects are showing very positive results. I encourage all of you to come visit YBRA and see that as much as it changes YBRA is still the beautiful place you remember.

I want to thank all the volunteers that have helped to maintain and improve the camp. Anyone interested in spending a few days helping at the camp please contact any YBRA representative. All the projects, especially the roofing, always needs additional funding. Any individual or group interested in "adopting" a particular building(s) please contact me for further details. Most of the camp improvements come through donations. So, please if you have an interest in seeing YBRA continue as the best geology teaching facility, take some time to visit and help YBRA continue to improve. Be a part of making YBRA the best camp for teaching our future leaders.

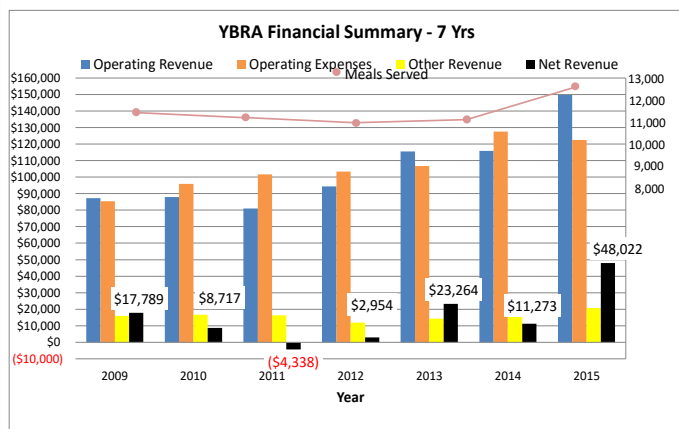
Ray Raymond...  
traybeau@q.com

## 2016 Camp Schedule

This year we welcome one new university group to YBRA for three days, a field course in Reclamation, Environment and Conservation run by the University of Wisconsin - Platteville. Additionally, the US Forest Service will hold a two day seminar at camp in late August and the regional section of the Search and Rescue Dogs of the US led by a Red Lodge resident will hold a five day seminar in early September. New groups added to our schedule over the last 5 to 10 years have been vital in making up for the revenue lost when other groups have terminated their use of camp.

### MAY — JUNE

May 31-June 7: Montclair State Univ.  
June 2-4: Univ. of Wisconsin-Platteville Reclamation,



YBRA financial summary of revenue and expenses from 2009 - 2015 along with total meals served.

Environment, Conservation Course  
June 5-11: Pennsylvania State Univ. Geology Course  
June 6-24: Univ. of Houston/YBRA Geology Course I  
June 19-30: Southern Illinois Univ. Geology Course

### JULY

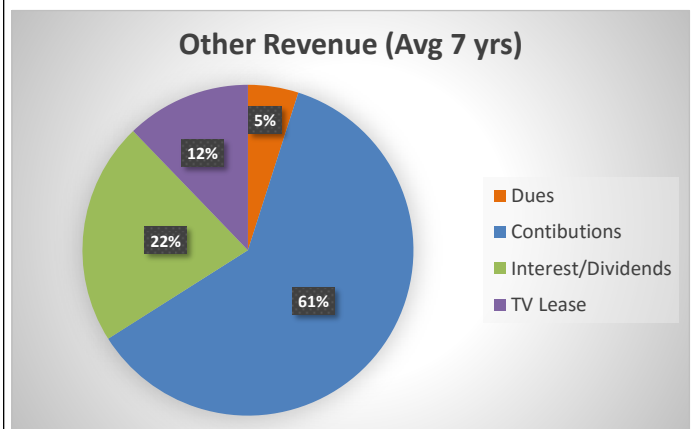
July 1-12: Southern Illinois Univ. Geology Course  
July 9: Univ. of Houston/YBRA Geology Camp I  
**July 10: YBRA council and general meetings**  
July 10-28: Univ. of Houston/YBRA Geology Camp II  
July 10-30: New Jersey State Museum  
July 12-31: Ohio Univ. Geology Course  
July 16-20, 29: The Woods Project  
July 24-31: Roger Williams U. Biology/Ecology Course

### AUGUST — SEPTEMBER

August 1-9: Ohio Univ. Geology Course  
August 1-15: Roger Williams U. Biology/Ecology Course  
August 12: Univ. of Houston/YBRA Geology Camp II  
**August 16: YBRA Alumni-Industry Symposium 2016**  
**August 20: YBRA 80<sup>th</sup> Anniversary Open House**  
August 30-31: US Forest Service - Aspen Seminar  
September 1-5: Search & Rescue Dogs of the U.S.- Seminar

## YBRA Financial Summary - 7 years

The financial picture for YBRA has improved significantly over the past seven years, particularly since 2012 (depicted graphically below). The increase in operating revenues from user groups is the result of increases in groups, enrollments, and camp rates during this period. One measure of this trend is that Jeanette and her staff served over 12,500 meals in 2015(!), an increase of about 8.5 % over 2014. Although expenses also have increased in the past seven years, we were substantially in the black last year. Furthermore, the figures show how vital revenues from other sources have been in covering deficits in the operating budget, funds that alternatively are used for maintenance and unexpected expenses. Most importantly, a breakdown of these "other" revenues illustrates the central role of contributions from members and supporters to our continued success.



Sources of "other" revenue (not generated by user groups) as average percentage for 2009 - 2015.

## YBRA People

Evan Lavery (pictured on front page) is our newest employee. He graduated from the geology program at Grand Valley State University in 2015 and currently is immersed in YBRA as an assistant handyman and director of membership and social activities. He is responsible for membership issues and promoting our story via social media and at conferences and other events. Welcome, Evan!



Ray Raymond, our camp manager, will retire at the end of this season. Ray has been a key leader for YBRA over the past eight years. During his tenure he has measurably improved the camp and its operation, including implementing our fire hazard mitigation program, improving the water supply system, maintaining our road, controlling noxious

weeds, hiring and managing camp staff, and handling many other issues as they arose. Not surprisingly, he was also adept at chasing bears from camp! Moreover, Ray helped guide YBRA decisions and contributed to the organization in ways not visible to most, donating both time and resources. In short, he believed in YBRA and its mission. Thank you, Ray!

Jeanette and the kitchen staff are truly invaluable members of the YBRA team. Many of Jeanette's assistants return each year to help prepare and serve thousands of meals during the camp season. This year's crew included: Margie Bannan; Peggy Timm; Cheryl Jones; Jeanette's relatives, Elaine and Tara Gates; Susan Euker and her daughters Emma and Jackie; and the grandchildren(!) of two former SIU faculty members, Gaelen Ritter and Maggie Utgaard (pictured above with Jeanette). We appreciate all of their hard work and devotion to YBRA.



Finally, I report the passing of a long-term supporter of YBRA, Ted Campen, the husband of Betsy Campen, our Treasurer. Ted was instrumental in helping us complete several projects over the years, including building the new bridge at the base of the camp road. Our condolences to Betsy and their family and friends. His obituary can be read at: [http://billingsgazette.com/lifestyles/announcements/obituaries/edward-b-ted-campen/article\\_43ab9afc-62ce-5f90-b0fd-0ff98b9488d.html?utm\\_medium=social&utm\\_source=email&utm\\_campaign=user-share](http://billingsgazette.com/lifestyles/announcements/obituaries/edward-b-ted-campen/article_43ab9afc-62ce-5f90-b0fd-0ff98b9488d.html?utm_medium=social&utm_source=email&utm_campaign=user-share)

## Featured Article

Each year we publish an original article or summarize a published paper by a YBRA member. The abstract and figures below are from a paper published this year in the *Journal of Sedimentary Research*, v. 86, p. 394 - 407. Jerry Bartholomew, the second author, recently retired from the faculty of the Department of Earth Sciences at the University of Memphis and moved to (where else?) Red Lodge, MT. He has taught part of the YBRA field course over many years and is currently a YBRA council member.

### CAMPANIAN PALEOSEISMITES OF THE ELK BASIN ANTICLINE, NORTHERN BIGHORN BASIN, U.S.A.: A RECORD OF INITIAL LARAMIDE DEFORMATION

WILLIAM T. JACKSON, JR.,<sup>\*1</sup> MERVIN J. BARTHOLOMEW,<sup>1</sup> WILLIAM R. DUPRÉ,<sup>2</sup> TAYLOR F. ARMSTRONG,<sup>1</sup> AND KEVIN G. STEWART<sup>3</sup>

<sup>1</sup>Department of Earth Sciences, The University of Memphis, 109 Johnson Hall, Memphis, Tennessee 38152, U.S.A.

<sup>2</sup>Department of Earth and Atmospheric Sciences, The University of Houston, 312 Science and Research 1, Room #312, Houston, Texas 77204, U.S.A.

<sup>3</sup>Department of Geosciences, University of North Carolina, Chapel Hill, 104 South Road, Mitchell Hall, Chapel Hill, North Carolina 27599, U.S.A. e-mail: [wjackson@gsa.state.al.us](mailto:wjackson@gsa.state.al.us)

**ABSTRACT:** Paleoseismites, in the form of clastic dikes and sills and convolute bedding record syndepositional-tectonism prior to lithification, fold growth, and onset of major orogenic events. The Elk Basin anticline, located in the northern portion of the Bighorn Basin, contains paleoseismites in Campanian strata along its eastern (forelimb) and western (back limb) margins. In the shallow-marine Telegraph Creek and Claggett formations, convolute bedding typically involves individual sandstone beds with vertical to overturned strata on either side of a nearly vertical vent, whereas the nonmarine Eagle Formation contains planar clastic dikes and sills, derived from liquefied sand-source beds, and convoluted bedding involving distorted laminae. Planar clastic dikes and sills were injected upward and laterally across overlying strata, and along pre-existing, nearly vertical, near-surface joints. Geographically, clastic dikes and sills are present only in the central portion of the anticline, while convoluted-bedding is present in the central and southern portions. Comparison of 145 clastic-dike measurements with 61 previously reported Laramide joint-set orientations for the Elk Basin demonstrate trends to be similar. Clastic dikes preferentially fill cross joints oriented normal to the axial trace of the anticline, while strike joints illustrate a dominant later Laramide joint set oriented subparallel to the axial trace. Paleoseismite formation is consistent with ~ M 5.5 earthquakes during earliest Laramide deformation associated with development of the Elk Basin thrust fault, whereas strike joints formed during subsequent Laramide deformation after burial and cementation of Campanian strata. (*figures on next page*)



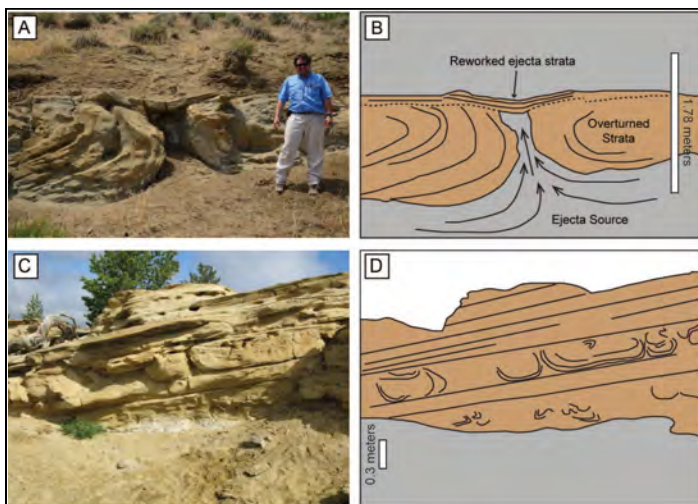


FIG. 4.—Typical paleoseismites expressed as sandblow vents in the shallow marine Telegraph Creek and Claggett formations. Note overlying undisturbed strata, indicating that vent material was reworked by water action.

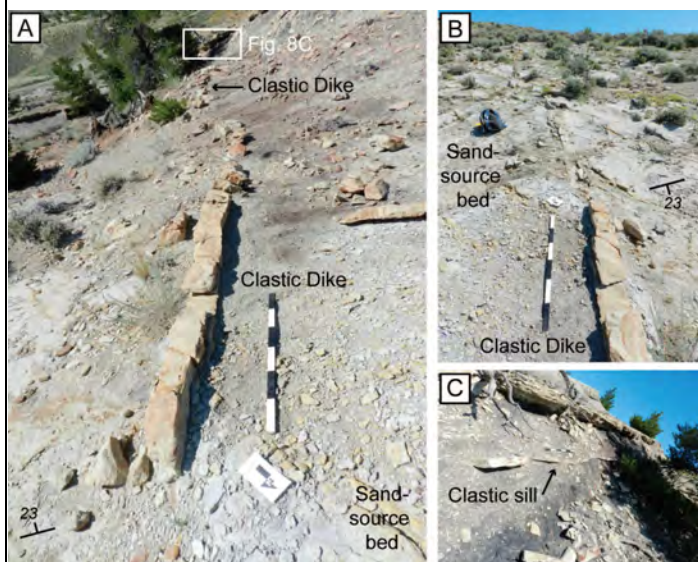


FIG. 8.—Large (~ 50 m total length) clastic-dike located on western flank of the Elk Basin anticline (Fig. 3). A) Clastic-dike is shown looking eastward and B) looking westward, directly injecting upwards from a sand source bed. C) Same clastic dike as in Parts A and B, farther to the west. Notice change in clastic dike from a nearly vertical to subhorizontal dip angle due to exceeding overburden pressure.

## Book Reviews

### Review of “Revenge of Time” by J.P. Totman

Looking for a summer read with a strong twist of geology, then try “Revenge of Time” by J.P. Totman. This geological mystery starts with a killer who leaves bodies stretched out on rocks from different geologic periods. The sleuths involved are Jane Barnes, a professor of geology and Craig Burrows, an FBI agent. Be prepared not only for a good mystery but pay attention to the geological details.

The book is compelling for those that love unpopulated areas of the desert and mountain West and hike in remote areas. This book may make you more cautious in these

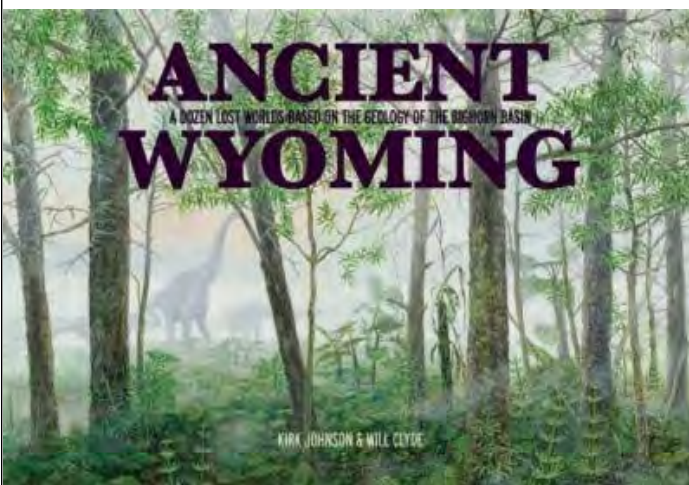
areas especially in areas with good stratigraphic sections.

Some say that the best novels have some education that slips in the door, disguised by the story. “Revenge of Time” especially fulfills this tradition with a detailed look at the geology and geography of the American West and Southwest woven into the plot. In addition, there is a synopsis of how geologists are working toward a unified stratigraphy.

J.P. Totman is a pseudonym for Judith Totman Parrish. Judy is a Professor Emerita in Geological Sciences at the University of Idaho who investigated pre-Quaternary climates particularly in the Cretaceous and in the time of Pangea. She is doing her stratigraphic research and active with the Geological Society of America. She is a commercial pilot who loves back-country flying and also riding her motorcycle. She also enjoys fishing and shooting.

The book was self published and available from Amazon either in paperback or your Kindle. You won’t find it on your local bookstore, so order it before you head out for your summer vacation!

Jinny Sisson, University of Houston



“Ancient Wyoming” by Kirk R. Johnson\* and Will Clyde\*, 2015, Fulcrum Publishing.

“Merging paleontology, geology, and artistry, *Ancient Wyoming* brings to life scenes from the distant past and provides fascinating details on the flora and fauna of the past three hundred million years. The book provides a look back in time at Wyoming, both as it is today and as it was throughout ancient history, at times a vast ocean, a lush rain forest, and a mountain prairie” (Google web page).

\* Kirk Johnson, the Sant Director of the Smithsonian's National Museum of Natural History, and Will Clyde, Professor of Geology in the Department of Earth Sciences at the University of New Hampshire, are both alumni of YBRA.

## Contributing to YBRA

Contributions YBRA are vital for sustaining our camp and its operations, and fulfilling our mission supporting field science education and research. With your help we can continue to provide the exceptional study environment that thousands of students have experienced over the last 80 years. Donations in any amount can be made to YBRA in a variety of ways and be applied toward several high-priority projects:

- 1) “**Dutcher Dorm**”, a new student dormitory to alleviate overcrowding; goal is \$25,000,
- 2) “**Reinhart Lounge**”, a bathroom-utility addition to the lodge; goal is \$5,000, and
- 3) “**Metal Roofs**”, replacing shingle or shake roofs to minimize fire hazard; goal is \$2,500 (one roof).

Donations to YBRA can be made by:

- 1) Check, made out to YBRA—(designate project or fund), and sent to Y.B.R.A., P. O. Box 20598, Billings, MT 59104-0598.
- 2) Credit card, using the “Donate” button at the YBRA website, [www.ybra.org](http://www.ybra.org).
- 3) Donating stock; contact Denny McGinnis ([dbmcginnis@outlook.com](mailto:dbmcginnis@outlook.com)) for information.

Do you shop using Amazon.com? If so, you can donate 0.5 % of the purchase price for most items to YBRA at no extra cost.

## YBRA Alumni-Industry Symposium 2016

### Tuesday, August 16

12:00 – 1:00 pm	Lunch at YBRA Main Lodge
12:45 – 1:00 pm	<i>YBRA's Legacy and Vision</i> Richard Fifarek, YBRA President
1:00 – 1:30 pm	George Buzan, <b>CGG Oil &amp; Energy</b> <i>Worldwide Marine Seismic Market</i>
1:30 – 2:00 pm	Roland Sauermann, <b>SGV International LLC</b> , & Larry Garmezy, retired, <b>Shell Oil Co.</b> <i>Interfacing Technology, Geosciences, and Instruction</i>
2:00 – 2:30 pm	Riley Brinkerhoff, <b>SM Energy</b> , & <b>Montana Geological Society</b> <i>Fluvial Prophecy: Stream piracy in South-Central Montana. Imminent capture of Rock Creek by Bear Creek at Red Lodge</i>
Coffee Break & Tour of YBRA	
3:00 – 3:30 pm	Jason Schein, <b>New Jersey State Museum</b> <i>Bighorn Basin Dinosaur Project Progress Report</i>
3:30 – 4:00 pm	Anna Phelps, <b>SM Energy</b> , & <b>Montana Geological Society</b> <i>Facies, architecture, and sequence stratigraphy of the Devonian-Mississippian Sappington Formation (Bakken-Equivalent), Bridger Range, MT</i>
4:00 – 4:30 pm	Claudia Regan, <b>USGS Northern Rocky Mountain Science Center</b> <i>Research in the Greater Yellowstone Ecosystem.</i>
4:30 – 4:45 pm	Tyler J. Krutzfeldt, <b>Mont Vista Capital</b> <i>YBRA: Building Bridges; Questions and Answers, Wrap Up</i>
5:00 – 6:00 pm	Bighorn Beverages (sponsored by Mont Vista Capital)



## YBRA Who's Who?

### Officers

President: Richard Fifarek, Southern Illinois Univ.  
 Past President: Jinny Sisson, University of Houston  
 Vice President: John Weber, Grand Valley State Univ.  
 Secretary: Laurel Goodell, Princeton University  
 Treasurer: Betsy Campen, Billings, MT

### Councilors

Jerry Bartholomew, University of Memphis  
 Eric Ferre, Southern Illinois University  
 Robert Giegengack, University of Pennsylvania  
 Tom Kalakay, Rocky Mountain College  
 Marv Kauffman, retired, Franklin & Marshall Coll.  
 Jennifer Lindline, New Mexico Highlands Univ.  
 Mike Murphy, University of Houston  
 Phil Robertson, retired, Southern Illinois University  
 Jason Schein, New Jersey State Museum  
 Jennifer Smith, Washington University  
 Mari Vice, University Wisconsin-Platteville

### Advisory Board

Tyler Krutzfeldt, Founder & Managing Director,  
 Mont Vista Capital  
 Amanda Dasch, Area Manager, Shell Exploration  
 and Production Co.  
 Murray Dighans, Exploration Geologist, SM Energy  
 Co.

### Staff

Ray Raymond, Camp Manager  
 Jeannette Reinhart, Camp Cook  
 Greg Creasy & Peggy Timm, Camp Handypersons  
 Dennis McGinnis, Financial Advisor  
 Evan Lavery, Membership & Social Director



Phil Robertson, "cowboy laureate" of Red Lodge, speaking to a crowd in the lodge.



YBRA float in the 2016 Red Lodge Fourth of July Parade on our 80<sup>th</sup> anniversary.



Greg Creasy (rt), our camp handyman, in the 1986 SIU field course!



YBRA booth, GSA 2016



Local YBRA folks manning the Fun Run table.

Yellowstone-Bighorn Research Association  
PO Box 20598  
Billings, MT 59104

**ATTN: Proxy Enclosed**