

TOBACCO ROOT GEOLOGICAL SOCIETY 46th ANNUAL FIELD CONFERENCE
ISU Lost River Field Station, Idaho July 29–August 1, 2021



View of the Big Lost River and high peaks of the Lost River Range from ISU Geosciences' Lost River Field Station near Mackay, Idaho.

CONFERENCE REGISTRATION INFORMATION

TRGS will hold its 46th Annual Field Conference July 29–Aug. 1, 2021 at Lost River Field Station (LRFS) <https://www.isu.edu/geosciences/fieldcamp/lost-river-field-station-location/> 15 miles north of Mackay, Idaho. The geology near Mackay includes thrust faults and folding associated with the Pioneer thrust system, enigmatic low-angle faults with multiple stages of both thrust and normal movement, the Pioneer metamorphic core complex and coeval Eocene Challis Volcanic Group, and the active Borah Peak normal fault which forms the boundary between the Big Lost River Valley and the Lost River Range to the northeast. The field station is directly west of Borah Peak, the highest summit in Idaho. Geologically significant post-Belt Supergroup but pre-Windermere Mesoproterozoic strata east of Challis are also a topic of interest. The Empire Copper Mine, itself responsible for the settlement of Mackay in the 19th century, is being actively explored for new minable resources and will be visited in a field trip.

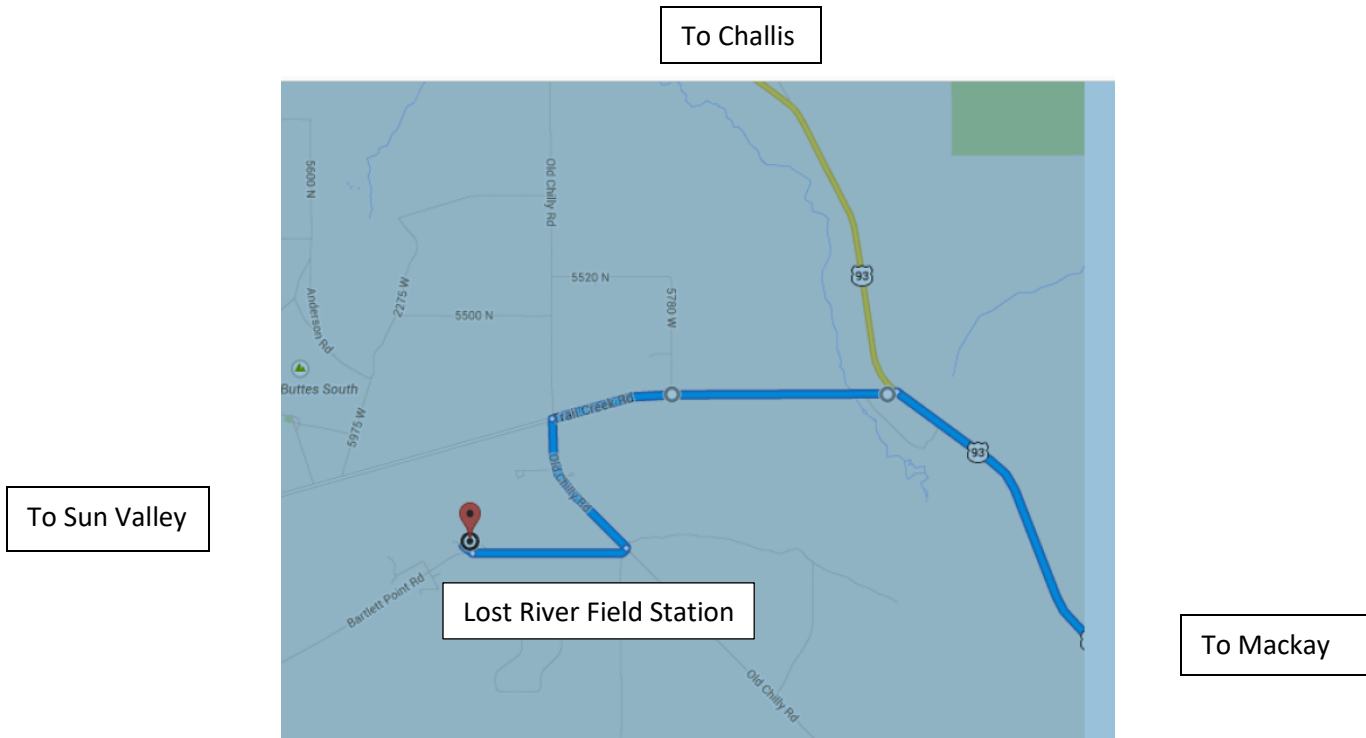
Conference organizers are Paul Link and Dave Pearson.

******* Covid19 Concerns*******

All participants must be vaccinated for Covid-19 virus. Be advised that you participate in this conference at your own risk. Please bring your face mask and be prepared to wear it.

Meeting Location

Our venue will be at the Lost River Field Station, north of Mackay, Idaho (see map below).



The Field Station is at 5930 Bartlett Point Road, off of Old Chilly Road, south of the Trail Creek road to Sun Valley, west of US Highway 93, and on the south side of the Big Lost River. The field station has showers, cell and land line phone access, internet, and a hot tub. Free on-site camping and rustic trailers are available but limited. If you intend to camp, stay in a trailer, or bring an RV to the field station please notify Paul Link (208-317-3946, linkpaul@isu.edu) **before June 5** to reserve a spot. We cannot guarantee space will be available to late registrants.

Mackay motels and RV parks

- Wagon Wheel Motel & RV Park 809 W Custer Rd, Mackay, ID 83251 (208-588-3331)
- White Knob Motel & RV Park
4255 US-93, Mackay, ID 83251 (208-588-2622)
- Bear Bottom Inn
412 Spruce St, Mackay, ID 83251 (208-588-2483)
- Challis Hot Springs, 5025 Hot Springs Road, Challis ID 83226 (208-879-4442)
hotsprings@custertel.net, is about 30 miles north of LRFS. The site offers camping with a large hot pool, on the banks of the Salmon River.
- The nearby Challis National Forest and extensive Bureau of Land Management land offer free camping.

Schedule and Logistics

On Thursday night after dinner (7 pm), there will be a TRGS Board Meeting at 8 pm.

The “official” TRGS meeting format is informal and begins Friday morning with invited talks followed by half-day afternoon field trips on Friday afternoon. Saturday and Sunday have all-day field trip options, and Monday and Tuesday will have informal day-long post conference field trips. Registration will be late afternoon Thursday, and all Friday morning.

An informal poster session will begin Friday morning and, weather permitting, posters can be taped to the outside of the field station through Saturday night. For further information or to help with the conference, contact Paul Link (linkpaul@isu.edu) or Dave Pearson (peardave@isu.edu).

Breakfasts Friday, Saturday, Sunday and Monday may be purchased for \$10 each.

Lunches will be prepared by meeting participants, with their cost included in the field trips. If you are a vegetarian, lunch options are available. Please check the box on the registration form if you are a vegetarian.

Dinner Thursday, Friday, and Sunday is \$15 for each meal.

There will be a catered BBQ dinner Saturday evening provided by Bear’s Western Barbeque of Hailey that can be purchased for \$25.

We will supply drinks, including soft drinks for the field trips, and beer for the Saturday BarBQ. Of course, participants are welcome to BYOB.

Transportation to various field sites will be by small group/individual private vehicle. Some field trips have rough roads and/or limited parking and vaccinated individuals are encouraged to share a vehicle when possible.

2021 MACKAY CONFERENCE SCHEDULE

Thursday July 29, 2021

3 – 6 pm On-site registration at Lost River Field Station

7 pm Dinner TRGS Business meeting at 8 pm

Friday July 30, 2021

7:30 – 9:00 am On-site registration continues Posters can be taped outside.

8:00 am Breakfast

Friday morning agenda

9:00 am - Paul Link Conference Chair

9:10 am - Ben Crosby-ISU Geoscience Chair, Welcome

9:20 am - Ryan Anderson and Donna Delparte *ISU Field Camp at Lost River Field Station*

9:35 am - TRGS Awards and Announcements

Technical presentations: *Talks (20 min) scheduled at 25-minute intervals, 5-minute discussion*

- 9:45 am Jim Sears — Connecting Idaho and Montana to northeast Siberia in a Proterozoic supercontinent
- 10:10 am Kendra Murray et al. — Low-temperature thermochronology reveals Neoproterozoic rift origin of the Rocky Mountain Front Range, Colorado
- 10:35 am Dave Pearson and Paul Link — Post-Belt Supergroup Mesoproterozoic to Cambrian rocks of the Leaton Gulch area, east of Challis, Idaho
- 11:00 am Jim Vogl — Overview of the Pioneer metamorphic core complex, central Idaho

Lunch 11:30 am. Look at posters outside. Make Sandwiches from the spread provided.

Field Trips leave at 12:15 pm.

A1. Paul Link and Brad Burton— Cross section of the Cordilleran orogenic belt over Trail Creek road north of the Pioneer Core Complex, central Idaho; Roadside field trip with minor walking.

A2. Paul Wetmore and Chuck Connor---The subsurface architecture of the Lost River Valley and changes in the dip angle of the Lost River Fault. Roadside trip, minor walking.

A3. Keian Moran and Ryan McDermott: Geology, historic and present activity of the Empire mine project, Custer County, Idaho, Minimal walking

Dinner at 7 pm

Saturday July 31

7:00 am Breakfast and prepare lunches

8:30 am: Trips leave

B1. James Vogl, Megan Borel, Rory McFadden: A tale of two detachments: Structural relationships and strain along the northwest margin of the Pioneer Mountains metamorphic core complex. Significant 6 mile walk on and off trail

B2. Glenn Thackray and Braedon Warner: The Big Lost River Floods and Glaciation of East-Central Idaho. Moderate walking

B3. Zachery M. Lifton: Lost River fault and the Borah Peak Earthquake fault scarp; Minor walking over uneven terrane

BBQ by **Bear's Western BBQ and Catering** at 7 pm. Chicken, Pork Ribs, Cole Slaw and Corn Bread.

Sunday August 1, 2021

7:00 am: Breakfast and prepare lunches

8:30 am: Trips depart

C1. Elizabeth S. Petrie and Bradford R. Burton: Kinematics, polyphase deformation and graphite distribution within the Pioneer fault-zone, Little Fall Creek, western Pioneer Mountains. 3 mile walk on trail up Little Fall Creek. Exposures are off trail

C2. David M. Pearson and Paul K. Link: Post-Belt Supergroup Mesoproterozoic to Cambrian rocks at Leaton Gulch. We will visit the enigmatic Leaton Gulch area of the northernmost Lost River Range, where Cambrian Wilbert Formation, post-Belt Mesoproterozoic rocks, and an interpreted fragment of the fill of the Beaverhead impact crater are exposed. Drive to the mountain top over sketchy roads. Moderate walking off trail.

C3. David E. Stewart, Colleen Elliot, and Reed S. Lewis: Eocene Challis volcanic rocks near Challis, Idaho; Ignimbrites, vitrophyres, lava flows and volcanoclastic strata near Challis. The walk to the Malm Gulch petrified forest involves 30 minutes of easy trail walking in a hot gulch; the other stops are road cuts.

Dinner at 7 pm

Monday August 2, 2021

7:00 am Breakfast.

If you elect to join the **informal Field Trip today (or tomorrow)**, **no food or hydration is provided. Be sure to sign-up a day or two prior to departure for head counts for the trip leader, and plan for your needs. **This area can be very hot and dry.****

Trip D1 - Informal Field Trip lead by George Grader: Rock Creek and Devonian sandstone channels in Jefferson Dolomite with optional climb of Borah Peak, Lost River Range. Off-trail 3-mile traverse, with climb of about a thousand feet, with optional summit climb.

Tuesday August 3, 2021

Trip E1 – Informal Field Trip lead by Dave Stewart: Jim Canyon Challis volcanic section, North Fork of the Big Lost River. Off-trail climb of 1,500 feet.

REGISTRATION

Registration for the meeting includes a hard copy of 2021 Northwest Geology, edited by David Pearson.

Idaho State University students who register for the conference by June 5 can have their meal and field trips cost covered by a donation to the ISU Geoscience Department. Please make reservations on the form and check the ISU Student Box.

Direct questions about the field conference or accommodations to Paul Link (linkpaul@isu.edu). Additional conference information may be posted on the TRGS webpage (<http://trgs.org>) or the

TRGS Facebook page. Contact Sandy Underwood (SandyUnderwood903@hotmail.com) if you are interested in helping out at the conference.

REGISTER BY MAIL: Complete this registration form and pay by check. If you intend to camp or bring an RV to the field station please notify Paul Link (208-317-3946, linkpaul@isu.edu) **before June 5** to reserve a spot. After that, availability of camping spots cannot be guaranteed. Other registrations please **postmark by July 20**.
Send to: Tobacco Root Geological Society, P.O. Box 118, Butte, Montana 59703-0118.

REGISTER ONLINE*: Online registration opens on **May 21 at www.trgs.org**. After registration opens, complete the [online registration form](#) and either pay by PayPal or send a check for registration fees to Tobacco Root Geological Society, P.O. Box 118, Butte, MT 59703-0118. Please be sure to print your confirmation email. Please complete the online registration form **no later than July 20**.

Online registration is the preferred method of registration for accurate attendee contact information, trip registration, and meal selection.

Registration deadlines are in place to secure adequate food for the catered meal.

All field trip participants, including leaders, must register for the conference. Field trip leaders do not need to pay for the field trip(s) they are leading. Friday, Saturday, and Sunday. Field trip registration includes a lunch. Please note that there are two places on the form where you can contribute to the scholarship fund of the TRGS – by purchasing a conference T-shirt or by making a direct contribution to scholarships.

MAIL-IN CONFERENCE REGISTRATION FORM

Please send form with check made out to Tobacco Root Geological Society to:

Tobacco Root Geological Society, P.O. Box 118, Butte, Montana 59703-0118

Attendee Name: _____

Attendee Address: _____

Phone: (____) _____

Email: _____

	No.	Amt. Paid
Conference Registration		
1. Professional \$ 65		\$
2. Student \$ 35 ARE YOU AN ISU GEOSCIENCES STUDENT? Y <input type="checkbox"/> N <input type="checkbox"/>		
Meals (<i>Free to ISU Geosciences Students who register by June 5</i>)		
Dinner Thursday at 7 pm \$15.00		\$
Breakfast Friday Morning \$10.00		\$
Dinner Friday Night \$15.00		\$
Breakfast Saturday Morning \$10.00		\$
Bear's Western BBQ Dinner Saturday Night \$25.00		\$
Breakfast Sunday Morning \$10.00		\$
Dinner Sunday night \$15.00		\$
Breakfast Monday Morning \$10.00		\$
FIELD TRIPS: A = Friday, B = Saturday, C = Sunday. \$15/trip, includes a sack lunch (<i>Trips are free to ISU Geoscience Students who register by June 5</i>) Vegetarian lunch? Y <input type="checkbox"/> N <input type="checkbox"/>		
Trip A1: Trail Creek Rd cross section of the Cordilleran orogenic belt (Link and Burton)		\$
Trip A2: Lost River Valley Subsurface architecture and dip angle changes of the Lost River Fault (Wetmore and Connor)		\$
Trip A3: Empire mine project, Custer County, ID (Moran and McDermott)		\$
Trip B1: NW margin of the Pioneer Mtns. metamorphic core complex (Vogl, Borel, McFadden, and Ortiz-Guerrero)		\$
Trip B2: The Big Lost River floods and glaciation of east-central Idaho (Thackray and Warner)		\$
Trip B3: Lost River fault and the Borah Peak Earthquake fault scarp (Lifton)		\$
Trip C1: Pioneer fault-zone study, Little Fall Creek, western Pioneer Mountains (Petrie and Burton)		\$
Trip C2: Post-Belt Supergroup rocks at Leaton Gulch (Pearson and Link)		\$
Trip C3: Eocene Challis volcanic rocks near Challis, ID (Stewart and Lewis)		\$
Field Conference T-shirt, please specify number and size, \$15/each		\$

TOTAL CONFERENCE FEES \$ _____

(If you plan to participate in the no charge post conference field trips please check: D1 E1)

DONATIONS (Optional)

Complete this portion of the registration form if you wish to MAKE A DONATION to the TRGS Scholarship fund. PLEASE SPECIFY ALLOCATION(S) BELOW.

<p>TRGS Scholarship for field-based projects in the northern Rocky Mountains. Preference given to mapping projects in Montana, Idaho, and northern Wyoming. Based in part on need, the scholarship is expected to be used for field expenses.</p>	\$
Please indicate: to grow the TRGS endowment _____ OR to spendable funds _____	
<p>Belt Association Scholarship. (This is not an endowment; all contributions are spendable) Funds are available to support field-based student projects in the Belt Supergroup or correlative strata.</p>	\$
<p>Harrison Scholarship In memory of Jack Harrison and made possible by a generous endowment from Jack to the TRGS, awards go to students working on any project involving Precambrian rocks. Based in part on need, this award can only be used for field expenses.</p>	\$
Please indicate: to grow the Harrison endowment _____ OR to spendable funds _____	
<p>Foster Scholarship (This is not an endowment; all contributions are spendable) Given in memory of Michael Thompson Foster, to students, researchers, or explorationists who best exemplify the prospector ethic. Criteria are a demonstrated interest and ability in mineral exploration, field research, or economic pursuits which advance our knowledge of mineral commodities and public commitment to responsible mining. Supported by generous grants from Rob Foster and additional donations.</p>	\$
<p>M. Dean Kleinkopf Scholarship (This is not an endowment; all contributions are spendable) Given in memory of Dean Kleinkopf, for geophysical and geologic investigations in the northern Rocky Mountains. Supported by an initial grant from Nancy Kleinkopf and additional donations.</p>	\$
<p>The Betty Skipp Research Award for Field Studies in the Rocky Mountains (This is not an endowment; all contributions are spendable). Given in honor of Betty Skipp, to women M.S. or Ph.D. students for research with a significant component of original geological fieldwork in Idaho, Montana, Utah, Colorado, or Wyoming. If funds are sufficient, men may also be supported.</p>	\$
<p>Unrestricted</p>	\$

TOTAL DONATION \$ _____

TOTAL AMOUNT ENCLOSED (Conference + Donation) \$ _____

** Please submit payment by check with this registration form**