Camarasaurus, Barosaurus, Stegosaurus, Brachiosaurus, Allosaurus, Coelurosaurus, Othnelia and Drinker—these are among the fossils The Black Hills Institute has collected in 10 seasons at the Waugh Quarry.

The Waugh Quarry site is in the Upper Jurassic Morrison Formation—a real “Jurassic Park.” The Houston Museum of Natural Science is honored that the Black Hills Institute has offered to host our group for a trip of a lifetime—participating in a professional dinosaur excavation at an iconic dig site—with the legendary paleontologist Peter Larson as our expedition leader.

In order to supply a unique digging experience for participants, while maintaining the scientific priorities for the site, much care and preparation of the site will be provided by the staff of the Black Hills Institute (BHI). There will be enough experienced and skilled BHI staff and field guides to give one-on-one instruction and guidance to participants.

This dig is designed to be both educational and productive, in the sense that we collect as much fossil material as we can in a safe and effective manner, and participants go home with new knowledge, experience and friends.

As part of the excavation team, you will spend four full days with HMNS and the Black Hills Institute at Waugh Quarry, a private site in Hulett, Wyoming near Devil’s Tower National Monument. Everyone will be able to dig for and expose dinosaur bones.

The group size for this extraordinary trip is limited to 15. The trip will be offered twice, once before the Casper Solar Eclipse and once after the eclipse. Participants may only sign up for one of these two sessions.

In blistering summer heat last week, diggers from the Black Hills Institute of Geological Research, a leading commercial fossil company, painstakingly scraped away with brushes, picks and knives at a jumble of dinosaur remains.

This prehistoric motherlode is emerging from the banks of a grassy ridge covered by pines and scrub oaks in the Bear Lodge Mountains, a beautiful and remote corner of north-eastern Wyoming.

In just one morning, they uncovered everything from tiny fragments of crocodile teeth to a huge chunk of humerus front leg bone from a 145 million-year-old brachiosaurus, the long-necked behemoth best known to most non-paleontologists as the beast that sneezed on the girl, Lex, in Jurassic Park.

The sheep-grazing pasture belongs to 70-year-old Elaine Waugh and her husband Leslie, 78. “As a young girl I remember that there were bones just lying around on the ground but back then we never imagined that they were worth money,” recalled Mrs. Waugh as she surveyed the dig.

But when the couple retired, they decided to get serious about the bones and contacted Pete Larson, who founded the Black Hills Institute in 1974.


Photo courtesy of Austin Madison
Trip Leaders

Peter Larson

Peter Larson is president and founder of the Black Hills Institute and prepared several of the dinosaurs and other skeletons in HMNS’ Morian Hall of Paleontology. Pete led the team that excavated Sue, the largest and most complete specimen of *Tyrannosaurus rex* found to date. He has published numerous scientific and popular works on dinosaur paleontology.

Black Hills Institute Staff

BHI staff members are experienced and talented field collectors. Black Hills Institute of Geological Research, Inc. (BHI), has been the leader in paleontological excavations and preparation since 1974, helping supply museums and collectors the finest in professionally prepared fossils and cast replicas. From dinosaurs to mammals, reptiles to pteranodons, ammonites to fish, and crinoids to trilobites, BHI does it all, and does it well. The BHI staff slated for the excavation includes Deb Christie, Sam Farrar, Matthew Larson, Timothy Larson and Matt Seney.

Black Hills Institute Field Crew

Experienced volunteer field crew members who have worked with BHI in the Waugh Quarry for several seasons will join the BHI staff as our field leaders.

David Temple

HMNS paleontologist David Temple developed the current Paleontology Field Program for HMNS. His team excavates a Permian locality in North Texas, looking for fossils of the fierce predator *Dimetrodon*. He has led several travel programs for the Museum with destinations including Tanzania, Wyoming and Germany. He worked closely with Pete Larson and BHI for the opening of the Morian Hall of Paleontology at HMNS.

Trip Itinerary

Day 0 (Aug 13/21) – Travel Day

This evening you will meet the group at the Hilton Garden Inn in Casper, Wyoming. Those in 2nd session not going on Eclipse trip will be traveling to/from Rapid City to meet the group instead of Casper. (This is due to hotel availability in Casper and also provides shortened travel by coach.

Day 1 (Aug 14/22) – Crazy Horse / Mt Rushmore / Black Hills Institute / Homestake Mine

Our charter bus will depart the Hilton Garden Inn in Casper, Wyoming at 7:00 a.m. for a 3 hour trip to Rapid City, South Dakota. While driving through the expanse of mixed-grass prairie, we may see bison, bighorn sheep, prairie dogs and black-footed ferrets. (Those traveling to/from Rapid City will be picked up to join the group.

We will visit the Crazy Horse Memorial honoring the legendary warrior and leader of the Lakota Sioux, credited with defeating Custer at the Battle of Little Bighorn. Our next stop is must-see National Monument Mount Rushmore. Both of these monuments are carved into the hard rock of the Black Hills, whose name derives from the dense forest of pine trees.
Our lunch will be at the Alpine Inn, located on Hill City, South Dakota’s historic Main Street—“once the site of rowdiness and gunfights.” The hotel, originally named the Harney Peak Hotel, was built in 1883 for mining executives after the 1876 discovery of placer gold deposits.

After lunch is our VIP behind-the-scenes tour of the Black Hills Institute of Geological Research with paleontologist Peter Larson and his staff. In addition to learning about the amazing dinosaur skeletons on display in the museum exhibition halls, we will have an exclusive behind-the-scenes tour of the fossil prep lab and the work done by the professional paleontology staff. At BHI we will also have an orientation for our field experience. Everyone will receive a personal dig kit, complete with all the tools you will need for our expedition. (Having your own set is a luxury not often offered for most group fossil trips. This means there will be no waiting on someone else to finish with a tool.) Of course you will also have time in the BHI gift shop for excellent dino souvenirs.

This afternoon we will tour the Sandford Lab at Homestake Mining Company in Lead, South Dakota on our way to Hulett. The Homestake deposit was discovered in 1876 by three prospectors, one being Hank Harney who opened the hotel in Hill City. When this mine closed in 2002, it had yielded over 40 million troy ounces of gold and was the largest and deepest gold mine in North America.

In the 1960s Raymond Davis, Jr. performed the Homestake Experiment in the mine to collect and count neutrinos emitted by nuclear fusion taking place in the Sun. For this work, he was awarded Nobel Prize in Physics in 2002. In 2007 the NSF selected the mine for the Deep Underground Science and Engineering Laboratory. It is now operated as the Sanford Underground Research Facility (SURF) which continues conducting research on neutrinos and dark matter.

Our private tour of Homestake includes a tram ride around historic gold mine operation, through the company town of Lead, ending in the mine facility which is now the cutting-edge Sanford Underground Research Facility.

After our afternoon of touring important geology sites of the Black Hills, we head to Hulett, Wyoming. After checking into the Devil’s Tower Inn, a welcome dinner will be hosted at the local saloon, Ponderosa Café—a short walk from our hotel in this one-light Old West town.
Day 3-6 (Aug 15-18/23-26) – Waugh Quarry Dinosaur Excavation

During your time at Waugh Quarry you will learn proper excavation techniques and become productive members of the dig team. All participants will perform the various field tasks including digging out bone from the soft siltstone matrix with knives and brushes, shoveling away dirt, jacketing bones for removal and other necessary field work activities.

Throughout the time in the field, you will learn the history of the Waugh Quarry site and hear the fascinating stories of dinosaur discoveries by Peter Larson and the BHI crew. Getting to know experts in their field and hearing about their work in a relaxed, personable setting is a cherished part of our past paleo expeditions.

We will spend four full days in the field. Breakfast at the hotel begins at 6:30 a.m. We will depart for the site at 8:00 a.m. Lunch will be provided at the site. After our day in the field excavating dinosaur bones, we will enjoy a group dinner. One evening at sunset, we will visit the geologic monument Devil’s Tower, which is a short distance outside of Hulett.

**Typical Daily Schedule:**
6:30 a.m. – Breakfast opens at hotel
8:00 a.m. – Depart for Waugh Quarry (5 minute drive)
8:15 a.m. – Daily briefing by BHI staff
8:30 a.m. – 6:00 p.m. – Diggin’ up dinos!
Noonish – Lunch at camp.
As Needed – Take as many breaks in the shade as necessary throughout the day.
Continually – Drink plenty of water. This is essential in the dry heat and high altitude.
6:00 p.m. – Close site for evening
6:30 p.m. – Return to hotel
7:30 p.m. – Dinner

Day 7 (Aug 19/27) – Happy Trails Breakfast

This morning after breakfast we board our charter bus for the trip back to Casper. In Casper, there will be drop offs at the Hilton Garden Inn and Casper Regional Airport. A separate van will transport those in 2nd session not going on Eclipse trip back to Rapid City to airport or hotel.
Hotels

Devil’s Tower Inn, Best Western
Highway 16 & 385, Hill City, South Dakota 57745
(605) 574-2577

Hilton Garden Inn Casper
1150 N. Poplar Street, Casper, Wyoming, 82601
(307) 266-1300

The Rushmore Hotel & Suites
445 Mount Rushmore Rd, Rapid City, SD 57701
(605) 646-4690

Dig Tools & Bone Exposure

BHI will provide all the necessary tools and training for participants on specific digging techniques developed over many years of dig experience in various types of dig conditions. Even if you have participated in other types of digs with other groups, you may be asked to change your techniques to our preferred methods. If you do not, you may damage the fossils. If instructions are not followed, you will be reassigned to other duties that do not involve working with the fossils.

Bone excavation is more about earth moving than bone moving. As part of the process of excavation, each digger will be expected to help with and use all of the following processes and tools:

- Picks and shovels are used to remove significant amounts of dirt where we don’t expect to find bone.
- Brooms are used to sweep away loose rock and dirt before digging continues.
- Six to eight-inch digging knives are used to dig through the bone layer where we do expect to find bone. These same knives are used to locate the bone as well. Sweeping away loose rock and dirt is vital to locating bones.
- X-acto knives are used to do the more detailed work around bones once they are discovered, while small brushes are used at this stage to clear the loose dirt from the bone, exposing fractures.
- Cyanoacrylate glue is used to mend cracks in the bone and stabilize the bone for removal.
- Burlap, plaster, and sometimes wood are used to jacket and strengthen the larger bones for removal.
- Excess dirt is removed from the dig area using brooms, hoes, shovels and wheelbarrows. Everyone is expected to help remove excess dirt.

You are expected to keep your digging area clean. This requires brushing, sweeping, shoveling, and occasionally operating the wheelbarrow. If you can’t see what and where you are digging, you will damage the bone.

All dig participants will help out with clean-up and other activities to close the site for the night. The process entails picking up and disposing of trash, gathering tools and excavated fossil material, stabilizing bones still in the ground and possibly securing tarps over the bone layer to protect it from weather.
The Physical Environment

The Waugh Quarry in Hulett, Wyoming is 3,700+ feet above sea level, an elevation to which you may not be accustomed. The air is thinner here than at lower elevations. You may find yourself becoming winded with less effort than usual at home.

The sun is more intense at higher elevations and protection from the sun is essential. Bring plenty of sunblock and apply it often. Wear a wide brimmed hat, drink plenty of water, and take breaks as necessary. Some folks also bring shade umbrellas. There are trees for some shade but often very little breeze.

Temperatures can vary substantially in any 24-hour period... from often over one hundred degrees during the day, to near freezing at night. August is usually hot and dry and the fire danger can be extremely high. At the same time, thunderstorms can be sudden and are often accompanied by hail, wind and blowing dust.

Insects, including mosquitoes and "no-see-ums" are sometimes plentiful. Bring a supply of insect repellent.

Vehicles can drive right up to the site, so it is ideal for folks who are a bit mobility challenged.

Field paleontology can be physically demanding. If you have any concerns about your ability to physically participate in this environment, it is important you consult your physician and HMNS staff before registering for this trip.

Dig-Site Facilities

The Waugh family has generously built a camp for BHI excavation teams. The camp has a covered area with picnic tables, storage closets for equipment and a small indoor food service room. A men’s and ladies’ port-o-potty is another luxury not often found at an excavation site. There is no running water, electricity, heaters or air conditioning. In case of medical necessity, a BHI air-conditioned trailer is available.

Cell phone service is only available from Verizon.

Clothing & Personal Gear

Layered clothing that is lightweight is recommended. Although you can dig wearing shorts, it is generally more comfortable to wear long pants. Much of your work will be laying or kneeling on the ground, frequently on chunks of dirt and rock. Some diggers prefer long-sleeved, lightweight shirts for the protection they provide from the sun. Include a jacket and/or sweatshirt for evenings.

Nearly any kind of closed shoe is acceptable. You may find some kind of hiking shoe or boot to be most versatile. If you bring boots, you might also want to bring a lighter pair of shoes or sandals after the digging day is done.
Expect that any clothing or gear you bring to the dig will show some wear. You may wish to wear the same pants and shirt each day, but also bring extra changes of clothing and more than one pair of shoes in case you need them. Laundry facilities are available at the hotel.

General work gloves are highly recommended. We encourage you to bring a pair that fits you well, and is comfortable to wear for an extended period.

Foam gardening cushions and knee pads are also recommended for the hours you will spend sitting and laying on rock and hard ground.

**Expectations of Our Hosts**

Leslie and Elaine Waugh, the owners of the ranch, are our gracious hosts and have been kind enough to allow the Black Hills Institute to bring a Houston Museum of Natural Science group to visit their property and participate in a real dinosaur dig. You must always remember that we are guests of the Waugs. They and their property are to be treated with the utmost respect. We should take every opportunity to show them our appreciation for their generosity. Please follow these rules.

- Leave the property in the same condition we find it, minus the fossils BHI is allowed to remove. All of the bones at the quarry are the property of the Waughs. No fossils leave the property until legal arrangements have been made with Black Hills Institute staff for their sale, donation or loan.
- No smoking is permitted.
- No campfires or open flames of any kind are permitted at any time.
- All trash and refuse of any kind must be deposited in designated trash receptacles and carried out at the end of each day.
- Food preparation takes place only in designated areas, under the guidance of BHI staff.
- Gates that you find closed should be closed again immediately after you pass through them. This is a working ranch with livestock.
- To avoid excessive wear and tear on their property, no personal cars can be driven to the site by trip participants. Vehicles should be parked upon arrival and moved only if absolutely necessary. Driving is only allowed on designated trails only, to avoid damaging fragile prairie grasses and other vegetation.
Participant Requirements, Responsibilities & Notices

- Participants should be in good physical condition and capable of traversing unpaved terrain at high altitude. Although the site is not handicap accessible, we can drive close to the dig site so ability to hike for long distances is not required. Please check with HMNS if you have any required accessibility accommodations that are necessary for you to enjoy the tour prior to registration.
- Participants must be self-sufficient.
- Participants are responsible for carrying their own luggage and belongings.
- **The minimum age of participant for this trip is 15 years.** Each minor must be accompanied by one adult guardian. Guardians are responsible for the supervision and safety of their minors. Misbehaving or disrespectful minors could be asked, along with their parents/guardians, to leave the dig with no refund for missed activities.
- Participants will be expected to conduct themselves in a safe and professional manner at all times. Unsafe, unprofessional, or otherwise inappropriate behavior (as determined by the quarry field guides) could result in your immediate dismissal from the dig with no refund for missed activities.
- Participants of this trip are not permitted to keep any fossil or partial fossil found, discovered or excavated on this trip. The fossils are owned by the landowner, who has given us permission to be on the property for the purpose of excavation.
- Field guides will be treated with utmost courtesy at all times. They are there not only to instruct but also to ensure the safety of the fossils as well as the participants.
- Illegal substances and guns are not allowed on the property at any time. The possession of such items would put the participants, our hosts, HMNS and the BMI in jeopardy and will result in your immediate dismissal from the dig with no refund for missed activities.
- Any threatening, dangerous or illegal behavior will be reported to the local authorities and will result in your immediate dismissal from the dig with no refund for missed activities.
- At times we may be in isolated locations where response to a medical emergency or injury could be lengthy.
- Smoking and open flames and are not permitted at the site.
- Our hotel is smoke-free.
- Prior to trip, participants must complete HMNS Release and Consent form.
- Prior to trip, participants must complete a Black Hills Institute Release and Consent form.
- Participants will meet in Casper, Wyoming for charter bus departure to excavation site. Transportation for field work is provided by passenger van. The only vehicles allowed at Waugh Quarry are the museum van and BHI’s vehicles. (If participants drive their own cars to Hulett, they must be left at the hotel on our days in the field.)
• Participants are responsible for making and paying for their own travel arrangements to and from Casper, Wyoming. This leaves flexibility for those wanting additional days in the area, want to use frequent flyer miles for airfare, or would like to travel by car.
• Room configuration cannot be guaranteed. We will try to accommodate preferences of one king bed or two queen beds.
• The typical daily schedule will be breakfast at 6:30 a.m., departure for site at 8:00 a.m., lunch at site, and return to hotel at 7 p.m. where dinner will be catered.
• No partial refunds will be made for missed activities. Participants who are late and miss the departure time may not be able to join the group in the field that day.
• The itinerary is subject to change due to inclement weather and unforeseen events. In case of weather that prevents accessing excavation site, alternate indoor fossil preparation activities will be substituted for the group’s activity.
• Many of the group meals are prix fixe. Please alert HMNS Staff of any food allergies in advance of trip so accommodations can be made.

Packing List

• Work gloves
• Foam gardening cushion
• Knee pads
• Wide-brim hat for sun protection
• Umbrella for shade
• Insect repellant
• Sunscreen (minimum SPF 30)
• Reusable water bottle
• Bandana or coolie
• Field clothes and shoes (light-weight layered clothing, sturdy closed-toe shoes)
• Evening clothes and shoes (not “evening wear,” comfortable shorts or jeans and jacket)
• Camera, binoculars
Registration requires a $1,500 members / $2,000 nonmembers nonrefundable deposit per person. Availability is based by order of receipt. To register send completed registration form on page 11:

Scan or photo/e-mail: travel@hmns.org  
Fax: 866.828.8648  
Mail: Travel, HMNS, 5555 Herman Park Drive, Houston, Texas 77030

### Pricing

**A - August 14 - 19, 2017:** $5,500 per person (double occupancy) - **1st Session SOLD OUT**

**B - August 22 - 27, 2017:** $5,500 per person (double occupancy), to/from Rapid City, SD

### Price Includes

- Hotel for 5 nights / 6 days*
- All meals (5 breakfasts, 4 lunches, 5 dinners)
- Professional paleontology field guides
- Ground transportation to/from hotel/dig site
- Complete dig kit with all the tools you will need for your adventure

* A necessary additional hotel night in Casper, Wyoming is included in the price for group A.

### Price Does Not Include

- Transportation to/from Casper, Wyoming
- Adult beverages with meals

### HMNS Contact Information

[www.hmns.org/travel](http://www.hmns.org/travel)  
travel@hmns.org  
(713) 693-4769

### Trip Map - [https://goo.gl/maps/e4wt4pxEkWt](https://goo.gl/maps/e4wt4pxEkWt)

### Single supplement: $450

For those registering as a single traveler, a single supplement will be included in your final payment invoice.

### Registration

Those registered for the Wyoming Solar Eclipse Trip 2017 have priority registration for this trip.

Registration requires a deposit of $1,500 members / $2,000 nonmembers per person. By registering, you understand and agree to the Expectations of Our Hosts on page 7, Participant Requirements, Responsibilities and Notices on pages 8 and 9, and Registration and Cancellation Information on page 10 of this document. Within a week of registration / deposit payment, you will receive a confirmation email from HMNS.

Final payment is required by May 10, 2017.

### Cancellation Information

- Deposits for registration are nonrefundable.
- For cancellations prior to the final payment date of May 10, 2017, a 100% refund of the full trip payment less the nonrefundable deposit will be issued.
- For cancellations after the final payment date of May 10, 2017, a 50% refund of the full trip payment less the nonrefundable deposit will be issued. Once the trip is sold-out and your spot is filled by another traveler, a refund of the remaining 50% of your full trip payment less the nonrefundable deposit will be issued.
- If for any reason HMNS must cancel this trip, 100% of deposits and final payments will be refunded.
**Session preference:**  
- [ ] August 14 - 19, 2017  
- [ ] August 22 - 27, 2017, to/from Rapid City, SD  
- [ ] Either session is fine.

*Note: This trip is only open for those already registered for the HMNS Solar Eclipse Trip.*

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Registration requires a deposit of $1,500 members / $2,000 nonmembers per person.

- [ ] Please charge my credit card $1,500 / $2,000 for the deposit to secure my reservation. I will pay the remaining $4,000/$3,900 by May 10, 2017
- [ ] Please include an additional $__________ on my credit card charge towards my final payment.
- [ ] I have enclosed a check for ____________.

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- [ ] We/I prefer one queen bed.  
- [ ] My travel companion and I prefer two double beds.  
- [ ] I wish to have my own room and will pay the Single Supplement of $450 in addition to the double occupancy rate.  
- [ ] Special medical needs, food restrictions: ____________________________________________

I have read this trip document and I understand and agree to the *Expectations of Our Hosts; Participant Requirements, Responsibilities and Notices, Registration* and *Cancellation* sections on pages 7 - 10.

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Registration requires a deposit of $1,500 members / $2,000 nonmembers per person.

- [ ] Charge same credit card as Traveler A (above).
- [ ] Please charge my credit card $1,500 / $2,000 for the deposit to secure my reservation. I will pay the remaining $4,000/$3,900 by May 10, 2017
- [ ] Please include an additional $__________ on my credit card charge towards my final payment
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