



YELLOWSTONE FOREVER

NATURALIST SERIES: CITIZEN SCIENCE #180613

Check-in starts at 4:00 p.m.
If you are running late please call us at
307.344.7749

Start: 6/15/2018 at 7:00 p.m.
End: 6/18/2018 at 5:00 p.m.

Location: Lamar Buffalo Ranch

Welcome to Yellowstone National Park. If you are a newcomer to the Yellowstone Forever Institute, you will be amazed at what awaits you during each day of exploration. We are glad that you are able to join us in Lamar Valley, a truly special place to call home while in Yellowstone! Our goal is to provide you with an enjoyable, high-quality educational experience and a safe and memorable visit to Yellowstone.

The following information is provided to help you prepare for your program. Please read it thoroughly and call us at 406.848.2400 or email contact@yellowstone.org if you have any questions. We recommend all first time visitors seek general park information through the National Park Service at 307.344.2107 or www.nps.gov/yell.

Important Information Included in this Document:

- Letter from Your Instructor
- What's Included
- How to Prepare for this Program
- Suggested Reading
- Yellowstone Forever Park Store Information
- Yellowstone Forever Supporter Information
- Code of Ethics
- Cancellation Policy
- Travel Information
- Supplemental Lodging Information

From the Instructor

Welcome to the second annual citizen science seminar offered through Yellowstone Forever in collaboration with Yellowstone National Park. This unique program will afford participants a chance not only to spend time among the breathtaking landscapes of Yellowstone National Park, but also the opportunity to truly give back to the park by contributing to real research projects. This research will provide the scientific understanding that will directly inform the management of the park we all love.

Specifically, this will be the second year the park is collecting data on the timing of natural events, known as phenology, throughout the northern portion of Yellowstone. The timing of such events are important ecologically to the functioning of the ecosystem. With changes in global climate regimes, it is important for us to understand the timing of such events as they may be affected by the changes in climate. Yellowstone



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researchers will benefit greatly from the data we collect, which will allow for adaptive, proactive adjustments in management.

During this program, participants will develop skills related to plant identification and insect identification, as well as techniques ecologists use in the field to study these organisms. Time will be spent in the classroom introducing basic concepts, while these concepts will solidify in the field as we work on transects collecting phenological data utilizing systematic methods. The intent is that participants walk away with a deeper appreciation of how science informs management, experience the joy of field work, and develop naturalist skills applicable to the research.

All field research materials will be provided, but please come prepared to work long hours in the myriad conditions thrown at us by Yellowstone weather.

We are excited to offer the first of what we hope will be many citizen science opportunities, and for the chance to deepen our collaborative efforts with the National Park Service.

Kind Regards,

Joshua Theurer, M.S.
Yellowstone Forever Lead Instructor

Program Itinerary

The following itinerary is subject to change due to weather, field conditions, or the whims of the instructors.

Day One:

7:00 p.m. Introductions and Orientation (Classroom)

Day Two:

9:00 a.m. Introduction to Citizen Science (Classroom)
10:00 a.m. Plant ID, Phenology, and Research Protocol (Lamar Buffalo Ranch)
12:00-1:00 p.m. Lunch (Lamar Buffalo Ranch)
1:00-5:00 p.m. Plant Surveys (field)

Day Three:

8:30-10:00 a.m. Entomology 101 - classroom instruction
10:00-10:15 a.m. Break
10:15-11:00 a.m. Citizen Science Overview, classroom instruction and hands-on learning
11:00-12:00 p.m. Practice sampling at the Lamar Buffalo Ranch, insect and plant identification field activity
12:00-1:00 p.m. Lunch (Lamar Buffalo Ranch)
1:00-3:30 p.m. Phenology Surveys



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3:30-5:30 p.m.	Return to ranch and examine
5:30 p.m.	Dinner break
6:30-8:30 p.m.	Optional evening insect collecting, field activity (malaise, pitfall, black light)

Day Four:

8:00 a.m.	Depart for hike while surveying for invasive plants
12:00 p.m.	Lunch (field)
1:00 p.m.	Transect survey
3:00 p.m.	Future of Citizen Science in Yellowstone National Park
5:00 p.m.	Program ends

What's Included:

Your tuition includes daily outings and transportation during your program. It does not include transportation to the park, park entrance fees, or lodging. Meals are included only on select programs with included catering. Gratuities are not included in the price of programming. If you would like to recognize exceptional service by a Yellowstone Forever Institute staff member, tips are appreciated. Donations to support Yellowstone Forever educational programs are also appropriate and will be used to improve and expand opportunities for people to make deep connections to Yellowstone.

Continuing Education Credit

Many of our Field Seminars are recognized by universities across the country. We are happy to provide a letter of completion and supporting documentation that you can submit to the institution of your choice to request approval for university credit or CEUs.

Lodging Option

Yellowstone Forever Institute students in Field Seminars based out of Lamar Valley have the opportunity to stay in our comfortable lodging at the historic Lamar Buffalo Ranch for an additional charge. Each log cabin has three single beds, chairs, propane heaters, and reading lamps. The ranch has a bathhouse with private showers and a common building with a fully equipped kitchen where you can prepare your own meals. For more information please see the last page of this document. Feel free to call our contact center at 406.848.2400 to make your reservations today.

How to Prepare for this Program:

How fit do you need to be?

This program is an activity level 3 and students enrolled in this program are expected to be active participants. Be prepared to hike up to 5 miles per day, comfortably, with occasional elevation gains up to 1000 feet in undulating terrain. We recommend you begin an exercise program right away if you have not already done so. Participants residing at lower elevations may want to arrive a day early to adjust to the altitude. To learn more



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about how specific medical conditions can be affected by Yellowstone's environment and our activities, please visit www.Yellowstone.org/experience/health-information/

General Clothing and Equipment List

Much of your time will be spent outdoors and all programs are held rain, snow, or shine. You should be prepared for a variety of mountain weather conditions and temperatures. Appropriate clothing, equipment, and footwear are very important. Spring, summer, and fall temperatures can range from below freezing in the mornings to 85 degrees Fahrenheit in the afternoons. The layered use of garments for protection against the wind, sun, and temperature extremes should guide your clothing choices. Loose-fitting layers allow you to maintain a comfortable and dry body as outside temperatures change, and as your own body temperature and moisture output changes with different levels of exertion. Some colder-weather items may not be needed in July or August, but please keep in mind that Yellowstone's weather is unpredictable.

Equipment:

Yellowstone Forever field staff assigned to your program will be carrying a first aid kit, bear spray, and emergency communication device.

- Daypack**, with enough capacity to carry extra clothes, water, lunch, camera, binoculars, field guides, etc.
- Water bottle**, one-quart is the minimum recommended. Camelback or similar hydration systems work well in summer but can freeze in winter.
- Sunglasses**
- Sunscreen/lip protector**, sun at high altitude can burn unprotected skin quickly.
- Camera, binoculars**
- Notebook/pencil**
- Pocket hand and foot warmers**, recommended November through May.
- Flashlight/Headlamp**, a small light for walking to and from your cabin in the evenings and mornings.
- Alarm**, so you're on time for the day's activities.

Summer Clothing:

- Insulating underwear**, capilene, polypropylene, or similar wicking fabric.
- Midweight insulating layer**, light, 200-weight synthetic fleece or wool shirt/pullover.
- Heavyweight insulating layer**, wool, down, or heavy-weight fleece jacket, for less-active times.
- Waterproof and windproof outer layer**, lightweight and breathable. Jackets and pants are recommended.
- Short sleeved shirt**, cotton okay in summer, but synthetic wicking shirts are ideal.
- Pants**, synthetic hiking pants, lightweight pile/fleece pants or tights or similar. Jeans are not recommended.
- Hats**, both a brimmed sun hat and an insulating hat for cool weather.
- Gloves**, lightweight glove liners and a pair of wool/fleece gloves or mittens.



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- Socks**, light wool or synthetic liner sock with heavier wool or synthetic outer sock. The inner-outer sock combination helps prevent blistering, wicks moisture and reduces friction. Cotton socks do not wick moisture and are not recommended.
- Hiking boots**, that provide stability, traction, and comfort. Unless you've consistently hiked in athletic shoes, bring boots that provide ankle support.
- Off-duty shoes**, sandals, athletic shoes, or other leisure footwear.

Suggested reading

By no means are you expected to read these resources in their entirety or purchase the recommend guides. Simply have a look and dive in as much as you are interested!

Kershaw, L., A. MacKinnon, & J. Pojar. 1998. *Plants of the Rocky Mountains*. Lone Pine Publishing. Auburn, WA. Print.

Tilt, Whitney. 2015. *Flora of the Yellowstone*. Gallatin Valley Land Trust. Bozeman, MT. Print.

Introduction to Pollinator Monitoring:

https://pollneaters.files.wordpress.com/2015/06/streamlinedbeemonitoring_web.pdf

Introduction to Pollinator Monitoring:

<http://www.communitygreenways.org/pollinator-monitoring>

Introduction to Entomology (the study of insects):

<http://entomology.si.edu/>

Park Stores

Our Park Stores feature more than 900 books, maps, and videos to help you plan your visit, along with a wide selection of shirts, hats, and other logo items to remind you of your visit to Yellowstone. Yellowstone Forever supporters receive a 15 percent discount on merchandise online or at any of our 11 locations in and around Yellowstone. Proceeds directly support Yellowstone. Visit: Shop.Yellowstone.org

Supporter Program

Yellowstone Forever Supporters directly fund priority park programs and projects. Supporters also provide scholarships for teachers and help expand programming for underserved youth. Benefits include a subscription to our magazine *Yellowstone Quarterly*, early registration and discounts for Yellowstone Forever Institute programs, and discounts on retail purchases throughout Yellowstone (exclusions apply). If you are not yet a supporter of Yellowstone Forever, an introductory subscription (one year) to our magazine *Yellowstone Quarterly* is included with your tuition. For more information, visit: Yellowstone.org/donate



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Code of Ethics

The Yellowstone Forever Institute is committed to demonstrating a high standard of appropriate and ethical behavior in Yellowstone. As a participant in a Yellowstone Forever Institute program, we ask you to adhere to the following Code of Ethics. In addition to the ethics highlighted below, the Yellowstone Forever Institute abides by all National Park Service rules and regulations. We also practice Leave No Trace guidelines for traveling responsibly in the wilderness.

Observing wildlife: We will do our best to have as little impact on wildlife as possible. Animals will be observed from a distance, using high-powered spotting scopes to help keep our presence from affecting their behavior. Participants should not expect to get close-up photographs of wildlife. The Yellowstone Forever Institute will adhere to National Park Service regulations by keeping a minimum distance of 25 yards from bison, elk, bighorn sheep, deer, moose, coyotes and nesting birds and 100 yards from bears and wolves. We will not entice wildlife with food, animal calls or any actions that change their behavior.

Leave what you find: It is illegal to remove natural or cultural artifacts (plants, animals, bones, rocks, etc.) from Yellowstone. Yellowstone Forever Institute instructors have permission from the National Park Service to manipulate plants, rocks, bones, etc. for educational purposes and will return them to their natural positions and locations.

General etiquette: Yellowstone Forever Institute groups will be considerate of other visitors and respect the quality of their experience. Voices and vehicle sounds carry great distances and affect both wildlife and people—remaining silent or very quiet while watching wildlife lets the sounds of Yellowstone (including wolf howls) prevail.

Roads and vehicles: Expect wildlife on the road, and drive at or below the posted park speed limits. When stopping to observe wildlife or other park features, the Yellowstone Forever Institute will move vehicles entirely off the road. If there is no safe pullout available, we will drive to the next safe place and walk back to observe the wildlife. We will not stop in the middle of the road, and should a traffic jam develop as a result of our activities, we will cease the activity.

Properly dispose of waste: We will pack out all trash, leftover food and litter. Your instructor will discuss techniques for properly disposing of human waste in the field.

Traveling lightly: When hiking or walking in Yellowstone, we will use existing trails and boardwalks. We will follow appropriate techniques when walking off-trail. Walking around muddy or wet places in the trail increases erosion and negatively affects the resource; proper equipment is essential to hiking ethically. Participants should come adequately prepared with the equipment listed for their program and should expect to walk through mud, snow or puddles in the trail.

Thank you for helping us set a good example in Yellowstone!



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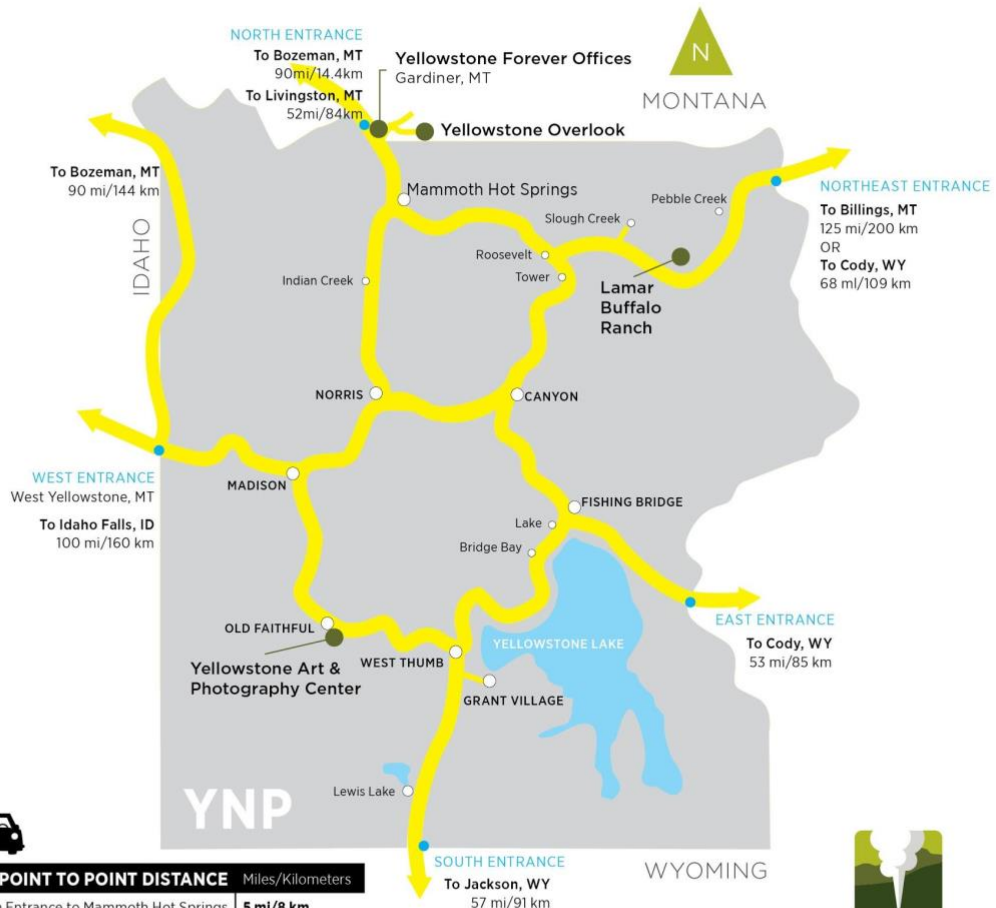
Field Seminar Cancellation and Refund Policy

If you cancel within seven calendar days of your registration date, your payment is refundable less a \$50 per person per course processing fee. Under most circumstances, if you cancel on the eighth calendar day or after, from the date of registration, 100% of registration payments will be forfeited. If lodging is cancelled after the eighth calendar day from the date of registration, 100% of lodging payments will be forfeited. Applicable taxes will be refunded in the event of program or lodging cancellations. We reserve the right to cancel a course up to 30 days before the first class day. If we cancel, you will receive a full refund of your payment. We urge you to take out accident, baggage, and trip cancellation insurance through a travel agent or website such as [TravelGuard.com](https://www.travelguard.com). Travel insurance can help protect you against financial loss if you must cancel or interrupt your trip.



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Yellowstone Map **YELLOWSTONE FOREVER**



POINT TO POINT DISTANCE		Miles/Kilometers
North Entrance to Mammoth Hot Springs	5 mi/8 km	
Mammoth Hot Springs to Norris	21 mi/34 km	
Norris to Canyon	12 mi/19 km	
Norris to Madison	14 mi/23 km	
Madison to West Entrance	14 mi/23 km	
Madison to Old Faithful	16 mi/26 km	
Old Faithful to West Thumb	17 mi/27 km	
West Thumb to South Entrance	22 mi/35 km	
West Thumb to Bridge Bay	21 mi/34 km	
Fishing Bridge to East Entrance	27 mi/43 km	
Fishing Bridge to Canyon	16 mi/26 km	
Canyon to Tower Falls	19 mi/31 km	
Roosevelt to Northeast Entrance	29 mi/47 km	
Roosevelt to Lamar Buffalo Ranch	11 mi/17 km	
Roosevelt to Mammoth Hot Springs	18 mi/29 km	

ELEVATIONS		feet / meters
North Entrance	5314 / 1620	
West Entrance	6667 / 2032	
South Entrance	6886 / 2099	
East Entrance	6951 / 2119	
Mammoth Hot Springs	6239 / 1902	
Old Faithful	7365 / 2254	
Grant Village	7733 / 2357	
Lake	7784 / 2373	
Canyon	7734 / 2357	
Roosevelt	6270 / 1911	



OPEN ROADS

YF FACILITIES

ENTRANCE GATES

COMMON POINTS OF INTEREST

1 mile (mi) = 1.609344 kilometers (km)



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LAMAR BUFFALO RANCH INFORMATION

If you need to be reached during your class, the number at the ranch is 307.344.7749.

Directions

Proceed to “Roosevelt” on the map; road signs say Tower Junction, on the northeast side of the Grand Loop Road. Signs at Tower Junction —“Yellowstone Inst 11” — direct you to turn onto the Northeast Entrance Road (opposite the Roosevelt Lodge) heading towards Cooke City. From Mammoth, it’s a left turn; from Canyon, it’s a right turn. The campus is located approximately 11 miles from the intersection, can be seen from the Lamar Valley road sign as you enter the valley and is the first and only group of buildings on that road. If driving from the Northeast Entrance, the campus is approximately 18 miles from that entrance.

What to bring

Shared cabins have three single beds, chairs, propane heaters, and reading lamps. Bring a sleeping bag, pillow, extra blankets if you like, a flashlight for getting around at night and a non-electric alarm clock (cabins do not have outlets). Stoves, lanterns, and candles cannot be used in or around the cabins, and smoking and food are not permitted in the cabins. The heated bathhouse is nearby and has hand soap and paper towels. You need to bring towels and toiletries.

Meals should be kept simple since participants will prepare their own meals in a shared cooking facility. The kitchen has gas stoves, a microwave, toaster, plates, silverware, pots and pans and spices, as well as coffee, tea, sugar and creamer. Please bring only what you will need during your stay as space in the kitchen and refrigerators is limited. There is no cell phone reception in the Lamar Valley and there is no Internet service. Please bring a calling card to use with the common phone.

What not to bring

The historic ranch runs on limited solar power with backup generators. For this reason, please do not bring electrical appliances such as radios, hair dryers and crock pots as these items overload the system and can cause black-outs. Camping and pets (with the exception of service animals) are not allowed.

When you arrive

Check-in is anytime between 4:00 and 8:00 p.m. the day of your arrival. We strongly encourage you to arrive before dark. Come to the bunkhouse (the building with the Yellowstone Forever Institute sign on it). During normal check-in hours, a staff member will greet and orient you to the ranch. If you must arrive after 8:00 p.m., please call us at 307.344.7749 so we know when to expect you. If no one is there to greet you, please find your cabin assignment and the code to the bathhouse on the bulletin board in the kitchen — located at the back of the building — and we’ll be happy to greet you the following morning. Check-out is by 9:00 a.m. the day of your departure.

During your stay

Yellowstone Forever Institute programs and facilities benefit from the hard work and generosity of a team of seasonal volunteer program assistants. You’ll likely meet one or more of our program assistants hosting your program. Our program assistants receive professional training in Wilderness First Aid, emergency response and procedures and bus driving. They help with program logistics, cleaning and maintenance of facilities and anything you need during your time with us. The bunkhouse is open at all times and is the center of activity, housing classrooms, the kitchen, and bathrooms. Make yourself at home in the bunkhouse; meet new people; enjoy a midnight snack; relax with classmates and enjoy your experience. The kitchen is a community area where everyone does their own cooking and cleans up after themselves. In the winter, the first classroom is used as a mudroom where coats and boots can be left by the door. Be sure to bring a pair of slippers or moccasins to wear in the bunkhouse.