ELEVATION SCIENCE INSTITUTE FOR NATURAL HISTORY EXPLORATION

TURNSTONE nature education

2024 Beartooth Master Naturalist Course

July 21- June 27

Course Overview & Description

Instructors: Drew Lefebvre & Jason Schein

The core focus of this week-long, intensive course will be *developing skills to read and interpret landscapes, both past and present*. We will use big themes of biogeography, forest succession, and habitat to frame our knowledge of modern landscapes, and geology and deep time to interpret ancient ones . Throughout the experience, participants will cultivate an ability to accurately interpret and understand the plants and animals, both ancient and modern, whose presence tells the story of our landscape.

Meeting Place: Yellowstone-Bighorn Research Association, Red Lodge, MT

Itinerary: (subject to change based on road/trail closures, blooming cycles, and bird activity)

- **Each Day:**

  Pack Lunches: 6:30 - 7:30 am in Fanshaw Lodge

  Breakfast: 7:00 am in Fanshaw Lodge

  Dinner: 6:00 pm in Fanshaw Lodge

- **Day 1:** **ARRIVAL, WELCOME, ORIENTATION, & INTRODUCTIONS**

  4:00 pm Arrive in camp

  5:00 pm Welcome and camp orientation *(classroom)*

  6:00 pm Dinner

  7:00 pm Introductions, course overview and expectations, goals of the Master Naturalist program *(classroom).*

❖ **Day 2:** **CONIFERS, BIOGEOGRAPHY, FIRE ECOLOGY**

8:00 am — We'll begin with an introduction to the field of natural history, focusing on the art and science of nature journaling. Through a variety of guided and unguided exercises, we will discover ways to document our nature observations. *(classroom)*

9:15 am — Depart for first field site (*TBD*)

10:00 am — On site, we will discuss the big picture: landscapes and fire succession. We will then home in on conifers: their adaptations, characteristics, and species. We will learn how to use a dichotomous key and put it into practice by working individually and in groups to identify conifer species, carefully documenting our findings in our nature journals.

12:00 pm — Lunch

12:30 pm — Depart for second field site (*TBD*)

1:00 pm — At a new site, we will recognize a different stage of fire succession and continue to practice with dichotomous keys to identify conifer species. We will dive deeper into careful documentation and identification, learning to rely on our observations and translate them into detailed journal entries. Before returning to camp, we will share our findings and reflect on the first day.

3:30 pm — Return to camp

4:00 pm — Free time. You may relax at camp, work in your nature journal, or choose from a provided selection of readings, exercises, and activities to build on the day's topics.

❖ **Day 3:** **PLANTS & FLOWERS**

8:00 am — Today we will dive deeper into botany: gymnosperms, angiosperms, monocots, and dicots. We'll dissect a flower, discuss flower structures and terminology, and ground ourselves in the important plant patterns that help us to identify the major plant families of Montana. (*classroom*)

9:00 am — Moving outdoors, we'll put our new skills into practice as we observe and look for patterns in a variety of plants around camp. We'll focus our attention on eight major plant families of Montana, using a dichotomous key to help us identify their patterns. We'll work individually and in groups to key out plants and add them to our journals. Before lunch, we'll go over questions and answers together. (*outdoors at camp*)

12:00 Lunch

12:30 Location TBD. We will deepen our exploration of plants and practice keying out shrubs together, working to create species accounts of shrubs in our nature journals. Throughout the afternoon, we will continue our botanical investigations, practice adding to our nature journals, and reinforce our knowledge of plant family patterns through games and activities.

2:00pm We'll transition to a discussion of invasive plants. What are they and why do they matter? Together, we'll spend some time identifying and pulling invasive plants at camp and helping to steward the landscape.

4:00 pm Free time. You may relax at camp, work in your nature journal, or choose from a provided selection of readings, exercises, and activities to build on the day's topics.

7:00 pm Enjoy the evening beside a bonfire, helping to destroy the invasive weeds we picked today!

❖ **Day 4:** **GEOLOGY & PALEONTOLOGY**

6:00 am *Optional*: early morning bird walk

8:00 am Today we'll jump into geology, both local and regional, and begin our discussion of deep time. (*classroom*)

9:15am Depart for field sites

9:45 am At a scenic overlook of the Bighorn Basin and the Beartooth Front, we'll discuss local and regional geology and paleontology. We'll also touch on local geography and history, and how it's all related to the area's spectacular geology.

10:45 am We'll spend the day visiting, touring, and participating in an active paleontological excavation. See a dinosaur dig site up close, and let working paleontologists answer all your questions. Lunch will be in the field at the dig site.

5:00 pm Arrive back in camp

❖ **Day 5:** **BIRDS**

8:00 am — We will start our day with a bird walk and a brief introduction to binoculars and optics. (*outdoors at camp*)

9:00 am — We'll begin our in-depth bird lessons, touching on bird habitat, how to recognize birds, topography and terminology, bird sounds, and more. If time allows, we'll explore bird mounts and study skins up close. (*classroom)*

12:30 pm — After lunch, we will travel to a field site for more birding practice.

1:00 pm — On site, we will explore the area for bird habitat and introduce field guides. We'll investigate the area, practice our observation skills, and learn to discuss and identify what we see. We will also spend time adding to our journals and creating species accounts.

3:30pm — Return to camp

4:00 pm — Free time. You may relax at camp, work in your nature journal, enjoy a provided reading, or practice your birding skills with a self-guided bird walk or exploration of mounts and study skins.

❖ **Day 6:** **INSECTS, MAMMALS, WRAP UP, & FINAL EXAM**

6:00 am — *Optional*: early morning bird walk

8:00 — We'll begin our final day with a look at some of our smallest local inhabitants: insects. We'll focus on ten of the most common insect orders in Montana, using mounted specimens to focus on identifying characteristics. (*classroom*)

10:00 — Moving outdoors, we'll explore around camp to catch and key out as many insect orders as we can. We'll create journal entries and practice our detailed observation skills. (*outdoors at camp*)

12:00 — Lunch

1:00 pm — After lunch, we will return to the classroom to learn about the mammals of Montana. We'll look up close at skulls and pelts and discuss family traits and characteristics.

3:00 pm — Use this time to review for the final open-book exam.

4:00 pm — Final exam and submit nature journals

4:30 pm — Wrap up: certification, continuing education, citizen science, and where to

go from here.

7:00 pm We'll celebrate the week with some local *wild*life - Pig Races at the Bearcreek Saloon & Steakhouse!

❖ **Day 7: DEPARTURES**

All are welcome to enjoy breakfast and pack a lunch.

Drivers are free to depart at any time.

If you require transportation to the Billings airport, departures from camp will commence as needed. Please do not schedule flight departures before 10am.

Food: The following meals are provided: Sunday dinner through Saturday lunch.

Accommodations: Six nights of lodging are included with the course fee. Our student cabins are basic and with various sizes and setups, but all have electricity (including lights and outlets), twin-sized beds, and wifi is strong throughout camp. Students should be prepared to share a cabin with up to 6 other people, cabins are separated by gender. Couples may be paired up in the event there is ample space. We provide a bottom sheet for your bed as well as a pillow and pillow case, but please bring a warm sleeping bag. Be sure to bring a flashlight or headlamp for night trips to the bathroom.

Equipment: You will receive a Field Camp gear list once you register. Most importantly are comfortable hiking shoes, at least 1-2 liter water bottle, backpack, rain gear, hat, and sunscreen. Weather can be varied so please be prepared with appropriate clothing, and warm layers. Bring a magnifying glass or small field lens. Binoculars are recommended for spotting wildlife, as well as wildflower field guides, plant keys, and birding guides. A field notebook will be required for taking notes in the field.

Physical Requirements: Easy-Moderate. Hiking distance covers less than 3 miles per day, with less than 500 feet of elevation change. Some short hikes may be on the Beartooth Pass, approaching 10,000' elevation, but those will come later in the week, after you've adjusted to the altitude.

Recommended Reading:

- *Glacier: A Natural History,* by David Rockwell.
- *Manual of Montana Vascular Plants*, by Peter Lessica.
- *The Sibley Field Guide to Birds of Western America*, by David Sibley.