



ESTES PARK ENVIRONMENTAL CENTER

opening minds & building relationships

The 4th Annual Student Research Expedition In Conjunction with the 20th GLOBE Annual Meeting Estes Park, Colorado, USA

The Estes Park Environmental Center is a leader in bringing regional, national and international conferences to Estes Park. This two day, one night student expedition, guided by the Estes Park Environmental Center, will focus on the comparative ecology in different life zones. Over the past 10 years Estes Institute has developed a research study in Rocky Mountain National Park which examines biological and climatic changes that occur in different elevations and over long periods of time. Using GLOBE Protocols, student investigators will conduct their own investigations in 3 different elevations using water quality protocols (i.e. dissolved oxygen, temperature, turbidity, nitrates and macroinvertebrates); atmosphere protocols (air temperature, clouds, precipitation and surface ozone). Additionally the students will take carbon readings; setup mammal cameras and record data; and perform habitat assessment within each station. After the field investigation students will enter the data into the GLOBE database, compare and analyze data in order to present the project to the GLOBE Annual Meeting. While the data is specific to the park students will gain an understanding of developing a scientific investigation of a biological life zone (https://en.wikipedia.org/wiki/Holdridge_life_zones). Estes Park Environmental Center encourages student to learn a process which they make take home and apply to their own investigations.

In preparation for the investigation, the students might want to familiarize themselves with Rocky Mountain National Park (<http://rockymountainnationalpark.com/>) and Fall River Road (http://www.nps.gov/romo/planyourvisit/old_fall_river_road.htm) where the investigation takes place. Wildlife from the area may be found at <http://www.nps.gov/romo/learn/nature/animals.htm>.

Questions students should think about in preparation for this investigation include: How does data change from one elevation to another? How do different elevations affect biological indicators? Is climate change more evident at one elevation than another? What might make the differences in climate change indicators from one elevation to another? Does your country have different elevations? Why would looking at monitoring data at different elevations in your country be important?

The following site contains videos from students who have conducted similar investigations: http://www.estesparkenvironmentalcenter.org/plains_to_park.php.

Based on the information found in these links, what is one observation or question you have about this exciting investigation?

Students accepted and registered for the investigation will receive a comprehensive safety and protocol packet.



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Schedule for Student Expedition

Sunday, July 17

Registration packets will be handed out to Student Expedition participants which include team assignments with team leaders, room numbers and a map for the YMCA Camp (Tuesday night), protocols, schedule for July 19th and 20th as well as final presentation information. Instructions will be included for having luggage ready for trip to YMCA Camp on Tuesday. All Student Expedition participants will be staying at the YMCA Camp of the Rockies Tuesday night.

Tuesday, July 19

8 AM Participants will assemble into their exhibition groups and meet their student leaders. Team leaders will give background on themselves and Park. Load participant baggage into vans with equipment for trip to Rocky Mountain National Park and then the YMCA of the Rockies.

9 AM Leave for Rocky Mountain National Park. On the vans team leaders will explain monitoring at the stations and what differences they might see from station to station. They will also discuss what questions the students might consider when comparing data.

10 AM Each group with their leaders will be dropped off at a different Life Zone on Fall River Road. Team leaders will hand out clipboards with data sheets, assign monitoring protocols and explain which student leader will be in charge of which monitoring protocols. Participants will rotate between the different monitoring protocols. Snacks and water will be provided. Monitoring will include the following GLOBE protocols, water quality using Vernier probeware equipment and atmosphere protocols. Additionally the participants will be checking animal trail cameras and checking ozone and carbon levels with portable devices. Each group will implement a repeat photography protocol.

Noon Participants will break for a sack lunch and a discussion of what data they have found and what are the implications.

1 PM Return to vans and go to the next monitoring station. Vans at the highest altitude will return to the bottom of Fall River Road and monitor at that location.

4 PM Load vans and meet at the Alpine Center at the top of Trail Ridge. View the Alpine Museum and use restrooms.

5 PM Start down Trail Ridge Road in vans stopping at picturesque views such as Many Rainbow curves.

6 PM Go to Y-Camp and assigned rooms. Rest and refresh.

7 PM Walk down to auditorium for dinner.

8 PM Team leaders will organize activities (i.e. volleyball, miniature golf, etc.)

9:30 PM Back to Lodge for debriefing of day.

10 PM Students go to assigned rooms for the night.

Wednesday, July 20

8 AM Students walk as a group to the Auditorium for breakfast.

8:45 AM Load vans with equipment, baggage and participants.

9 AM Leave for Park.

10 AM Students will complete monitoring in final Station.

Noon Students as a group travel to Sprague Lake for a picnic (provided by Estes Park Environmental Center) and walk around Sprague Lake.

3 PM Go to Moraine Park Museum

4 PM Return to hotel and chaperones. Unload luggage. Student leaders debrief students about presentation.

Dinner on their own or follow GLOBE agenda.

Students will create round table exhibits on their own. GLOBE tablets will be used for presentation.

Thursday, July 21

Table Presentation



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Safety When Traveling in the Rocky Mountains

- Weather can change quickly. Bring a light waterproof jacket and hat in case of rain. Remember to layer your clothes with sweatshirts or sweaters. The air is very cool and the wind strong in higher elevations. Gloves are sometimes used for warmth.
- We will be travelling from elevations of 7500 feet to 11,000 feet. The sun is very intense. Be sure to bring sunscreen, a sun hat and sunglasses so you can see the beautiful scenery around you.
- The air is very dry. Hydrate all the time even if you're not hiking.
- Wear sturdy shoes on the student expedition. No sandals or flipflops. The terrain is rocky and uneven. Be sure to wear socks to eliminate blisters.
- Follow the instructions of your team leaders while on the student expedition.
- Never wander from the established path. In the tundra the plants take years to grow and we don't want to cause any damage.
- Always have a buddy with you. Your chaperone should be told if you are not with the group.
- If you are feeling ill or have an injury, tell an adult immediately so that they can get help.
- Never feed animals or approach them in the park.
- Bring a camera to take pictures.
- Carry out all trash.
- Never remove any natural thing from the park (i.e. rocks, antlers, plants).
- **MOST OF ALL ENJOY THE BEAUTY AND GRACE OF ROCKY MOUNTAIN NATIONAL PARK.**