

Dalhousie Advanced Field School 2016

SUMMARY REPORT

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INTRODUCTION

The Advanced Field School offered to Dalhousie Earth Science students provides a unique opportunity to spend four weeks studying in California and Nevada. This region has a rich and varied geologic history, resulting in many different learning opportunities. Active volcanoes and faults in the area, classic fold and thrust belts, as well as metamorphic complexes are all easy to study and explore due to the regions arid climate and resultant bedrock exposure. The contrast with the local field schools is incredible. In addition to the field work skills, this field school also requires students to work together to set-up and maintain the camp and provide food for the group.



Figure 1 Valley of Fire campground.

TRIP DETAILS & BACKGROUND INFORMATION

During the Winter semester, there were regular meetings and assignments to prepare the group for the field school. Students arrived in Las Vegas on or before the 26th of April. That evening, the field school began with a quiz and compass practice. The following day was one of several 'field trip' days, where we learned about the regional geology and other things that would help us understand what we would see in the field areas. The first project was Rainbow Gardens; we were working just east of Las Vegas while staying at the Valley of Fire campground. Here we produced a detailed stratigraphic log of our respective sections.

Through collaboration with other students, we pieced all the information together to produce an overview of the whole study area and the transitions in depositional environments.

After Rainbow Gardens, we packed up and moved to Furnace Creek. On our way, we stopped at many interesting sights, including some cinder cones. We also stopped in an area with well-developed desert pavement, soil development, and carbonate formation to see how these change with time. We completed two projects here; the first project involved mapping a 6x2km area off an alluvial fan. We focused on the ages of the different deposits as well as the displacement caused by the active faults in the region. The faults were either normal, often associated with grabens, or strike-slip. After this project we had some field trips to get ready for the following project, as well as to explore the area, as in Figure 2.



Figure 2 A volcano we visited on a field trip day.

The second project here was Monarch Canyon, where we focused on mapping a length of canyon with three distinct structural levels due to detachment faults. The lowest level was Precambrian gneiss, the middle was younger schists, and the upper level was undeformed. This project helped us develop our mapping skills, as the steep canyon walls differ greatly from the relatively flat terrain in Nova Scotia and provide additional challenges. Figure 3 shows a group of students exploring a different canyon in preparation for this project.

BENEFITS OF TRAVEL

Travelling to the States allowed me to see and explore places I would otherwise have been able to. The field school was located in an environment unlike anything we could study in Nova Scotia. The region I had the opportunity to explore due to this field school is very unique and geologically diverse. Additionally, the climate allows for exceptional exposure, as limited water means limited erosion and vegetation.



Figure 3 After giving the students time to investigate the area for themselves, instructor Mike Young (second from right) attempts to corral them to point out some important things to note.

OUTCOMES OF TRAVEL

As a result of traveling to a new region, I have acquired new skills and experiences that will help me in the future. I have also learned new ways to apply the things I learned here in Nova Scotia to other places and scenarios. This flexibility will enable me to use what I learned on the trip in other situations.

The camp itself also allowed me to learn and experience new things. I have spent time in a similar camp environment before, but everyone is different and it is important to be able to figure out your personal role

in contributing to a well-run camp.

SIGNIFICANCE TO NOVA SCOTIA

During this field school, I developed existing skills and gained new ones. I now have much more field experience, and learned new tips and tricks to do a better job. I will now be able to apply these wherever I end up. I volunteer with Halifax Search and Rescue and some field skills will help me do a better job even there! Navigation and observational skills are vital for both geologic field work and when looking for a lost person.

ACKNOWLEDGEMENTS

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