Mountain Lake Biological Station
Pembroke, VA
Regional Field Trip

May 22-25, 2014

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I. Summary

Twelve students – four freshmen, six sophomores and two seniors from three Historically Black institutions – Coppin State University (Baltimore City), Howard University (Washington, DC) and Hampton University (Virginia) as well as the University of Maryland, participated in the SEEDS Regional Field Trip from May 22-25, 2014 at the Mountain Lake Biological Station. Faculty advisers from Coppin State – Dr. Mintesinot Jiru and Dr. Tatiana Roth also participated, along with Teresa Mourad, ESA Director of Education and Diversity Programs. The program was led by Dr. Eric Nagy from MLBS.

Nearly all the students had never visited a field station or done any ecological fieldwork prior to this field trip. Working with researchers and graduate students at MLBS, the students learned about the forked fungus beetle and the black-eyed juncos. In small groups, students developed questions related to the aggression behavior of mated and unmated male juncos and investigated the relationship between beetle size, sex and mite load.

Cascade Falls, photo by T. Roth

On the morning of May 24, students had an engaging conversation with our Career Panel: Dr. Mintesinot Jiru (Coppin), Dr. Tatiana Roth (Coppin), Dave Neely (University of Tennessee and Tennessee Aquarium), Corlett Wood (graduate student, UVA); and special guest, Dr. Emmanual Frimpong (Virginia Polytechnic Institute and State University). Students demonstrated high interest in the interdisciplinary direction that ecology as a field is moving.

Students also learned about their own leadership styles and exchanged ideas on possible chapter activities. We also had a lovely hike up the Cascade Falls.

Students also had the opportunity to visit the NEON tower located at the field station, which will soon be operational.

II. Reflections of the Field Trip Experience by Students

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Research Tour and Group Investigations

Black-eyed Junco, photo by T. Roth

After lunch, the group met at the Auditorium. Firstly we talked about what we expected before coming to MLBS and how it differed with the experience. Dr. Vince Formica from Swarthmore College (vformicl@swarthmore.edu) was introduced by Coordinator of the trip. He is one of the scientists working on the beetle project. He explained how doing research is more exciting than just reading about it. To give the group a better experience, we were divided into two groups; one that will be working with the Black Eyed Junco and the other with the beetle.

Rebecca Anilu Castro, Irabor Imobisa, Alexa White, Joyi Ihionu, Julyse, and Kyaira Ware joined Mikus, Abby and Samantha on the Juncos Project. This group was dropped off by Eric (MLBS Director) to a location right by the field station. Here Mikus informed the newly-formed crew that they will be hiking up a steep hill for about 10 minutes. It was a bit challenging but the group succeeded without complaining. The group was further divided into two groups of three. One group went with Mikus the other with Abby and Samantha. Irabor, Joyi, and Rebecca were in Mikus's group while Alexa, Kyaira, and Jalyse were in Abby's Group.

Mikus's group focused on how the presence of a hawk impacted aggression levels in male Juncos. First he placed a stuffed Cooper Hawk in the environment covered in a blanket, while playing alarming calls. After the presence of the bird was confirmed the blanket was then removed and the predator was exposed. The distance of the bird was measured while the calls were being produced. The hawk was then removed and other calls were produced to signal to the Junco male that another male has trespassed in its territory. After the male flew away the crew walked on Homestead trail playing the calls to see if they can find any more birds. They continued to walk up the Moonstomper Trail, and then headed back to analyze the data point that was collected.

Abby's group placed a caged female bird in male territory while emitting mating calls to attract the males. While observing the scientist would be able to see how a mated and unmated male courts a potential partner. This is produced for about ten minutes. Unfortunately the courtship behavior data could not be collected for unknown reasons. The male Junco did not appear. Oddly enough other bird species appeared when the calls were played. The group met up with Mikus's group and head back to MLBS. Using statistical program the group learned how to graph the data and the importance of their findings.

Larissa, Deanah, Rachel, Frederick, Delroy, and Daniel collected data about the forked fungus beetle (*Bolitoherus cornutus*) and the mites that live on it, under the direction of Angela Menna(am3gk@virginia.edu), Corlett Wood (cww9fg@virginia.edu), and Dr. Vince Formica (vformic1@swarthmore.edu). The forked fungus beetle lives and feeds on fungi that live on tree bark and log wood. The nocturnal beetle can live for up to 5 years, and defends itself against predators through camouflage and the release of strange odors. The high temperature for the day was 73°F, and the skies were partly cloudy with intermittent breezes.

Looking for beetles... photo by T. Roth

The beetle group returned to the first collection site after lunch, and searched for beetles on their two main food sources and habitats. The group hiked through the woods at MLBS to seven data collection sites, which mainly consisted of rotting logs covered with fungal outgrowths called brackets. *Ganoderma tsugae* only grows on hemlock trees, while *Ganoderma applanatum* only grow on oak trees. A particular species of mites take advantage of the beetles' fungal diet, and ride on the backs of the beetles to feed on brackets of the same fungi. The purpose of the investigations conducted today was to collect data about beetle size, sex, and mite load, and to formulate questions about relationships among the three.

Group members scraped live brackets that remained on logs and trees, in order to search for forked fungus beetles without destroying the brackets themselves. Brackets that had already fallen off were broken apart in the hopes that new beetles and larvae would be discovered. Once a beetle was found, its tag, if given, was noted. Males, which have large horns, and females, that lack such growths, were appropriately classified as well. Members used calipers to measure the elytra (wing covering) width and length, and counted mites, if present, on the beetle. The group moved on to the next site if no one else could find new beetles at the moment.

Once data collection was complete, Dr. Formica, Corlett, and Angela taught the group how to analyze the findings. Daniel, Deanah, and Larissa chose to present data pertaining to fungus species, and Frederick, Delroy, and Rachel chose to report findings on beetle sex.

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The Cascades" was written in a large print on the board at the entry of the trail. The two vans full of students unloaded and we all enjoyed a lunch beside the bubbling stream. Although various insects and bugs were trying to join us during the meal, the scene was very aesthetically pleasing. We embarked on our hike along side the creek upstream. The trail overall was very rocky and hilly. Along the way we spotted many millipedes and centipedes crossing our path. We sighted a dead deer floating in the water. It reminded us of the circle of life.

At the Cascades. Photos by T. Roth

Poison ivy was laden throughout the vegetation lining the trail. We were very careful to observe and remark its presence. The hike itself was extremely scenic and full of intricate natural beauties. Parts of the hike were very steep and required a careful approach. After hiking two miles we reached the Cascade Falls. It reminded us of the value of nature and its treasures. All of us immediately took off our shoes and waded through the stream leading up to the waterfall. The mist in the air felt wonderful after our hike. As we sat on the rocks in the middle of the stream, we watched the children and families playing in the water. It was nice to know that there were still tranquil places in this world that are protected and preserved for years to come. The hike back was a little quicker than the hike to the falls. We spent that time reflecting. Holistically, the experience was extraordinary and an event we will never forget.

Following the hike to the falls, our presentations were up to bat. The first group was the beetle group. After their presentation, we had a better understanding of the questions to be answered throughout the experiment. Our group presentation of the Junco bird was a rewarding experience as well. By presenting, we realized that we came to understand a lot of nuances and details of the experiment in just one day. We were very happy that the researchers and doctors were impressed with our work.

Student Presentation. Photo by T. Roth

III. Career Panel

We were grateful to be able to convene a diverse panel, comprising Dr. Mintesinot Jiru (Coppin), Dr. Tatiana Roth (Coppin), Dave Neely (University of Tennessee and Tennessee Aquarium), Corlett Wood (graduate student, UVA); and special guest, Dr. Emmanual Frimpong (Virginia Polytechnic Institute and State University).

Students were advised to find research opportunities as undergraduate students especially if they would like to continue in ecology in graduate school. They were also concerned about how they should prepare for the complex environmental challenges that they see. Students were encouraged to take classes from different departments and perhaps even a second degree so they can be comfortable on interdisciplinary projects and able to communicate across disciplines. The panel noted that there is a place in ecology for many disciplinary interests and skills including the arts and humanities, education, communications, computer science, math, media, and medicine.

Ecology is also increasingly studied at large scales. An example is the National Ecological Observatory Network. MLBS hosts one of 20 towers across the continent for NEON environmental data sensors. Later that evening, students were able to visit the NEON tower.

Career Panel. Photo by T.Roth

IV. Leadership Styles and SEEDS Chapters

Teresa Mourad facilitated a workshop that gave students an opportunity to think about their own leadership styles using the Myers-Briggs Leadership questionnaire. Leadership is needed when change is desired and organization is required. Students came to understand that everyone has a role to play, depending on their own personality attributes and strengths. Students were also given opportunities to discuss ideas and challenges they face in their SEEDS chapters and to encourage one another in their activities.

Acknowledgements

The Ecological SEEDS program is grateful to the Mountain Lake Biological Station staff, researchers and graduate students for making this field trip an incredible experience for students. Special thanks go to Dr. Eric Nagy, who coordinated all the activities on site with everyone involved. Appreciation also goes to Dr. Mintesinot Jiru for arranging to drive students from Coppin State University and Howard University to the field station and sponsoring the use of Coppin's van; to Dr. Tatiana Roth, who took fabulous photos of the field trip; and to all the participating SEEDS chapter advisers – Dr. Jiru and Dr. Roth (Coppin), Dr. Barbara Abraham (Hampton) and Dr. Mary McKenna (Howard) for selecting students and encouraging them to participate.

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Participants, Organizers and MLBS Graduate Student leaders. Photo by T. Mourad