MESsages

Excerpts from the Master of Environmental Studies Blog

FALL 2015

Director's Note

MES students within the same cohort tend to form close bonds as they tackle core classes, candidacy papers and thesis research. Students in different cohorts have some opportunities for interaction in electives, "late night seminars" and MESA activities. However, I heard from MES students last year that they wanted even more collaboration and conversation between cohorts.

We started the school year with an ambitious experiment: taking both cohorts on a three-day field trip to the Olympic Peninsula! Our caravan—80 people, 9 vans—departed one early Thursday morning for the Elwha River. (We left on time, which bodes well for the next two years, especially given the number of students who were in electives until 10 the night before!) We spent the day touring key sites on the Elwha River dam removal project—learning about revegetation at the former Lake Aldwell, salmon habitat restoration at the former Elwha Dam site, and research on sedimentation and ecosystem changes at the mouth of the river.

We spent the next two nights at the Olympic Natural Resources Center in Forks, where the staff worked with us to expand their "maximum capacity" of 50 by converting conference rooms to dorms and allowing us to pitch tents along covered patios and walkways. For those of us who camped outside, this covering was a blessing when we were hit by heavy wind and rain.

We split into two smaller groups the next day. One group visited the Makah Museum, where students were impressed by a gray whale skeleton suspended from the ceiling, and Cape Flattery, where students were mesmerized by a gray whale swimming back-and-forth just off the rocky coastline below them. The other group hiked the Ozette Triangle, which includes a three-mile stretch of rugged beach and steep headland.

Our field work on the third day was cancelled because of high winds. We stayed inside, discussing William Dietrich's The Final Forest and hearing from a Washington Department of Natural Resources biologist about experimental forests and habitat for threatened species like the marbled murrelet and northern spotted owl. As we drove back through the hard rain, I was thankful for two days of decent weather in early October and the can-do attitude of our students—essential for making possible this kind of logistical adventure.

Our robust enrollment (44 first-year students, 34 second-year students) speaks to the continuing relevance of MES as a pathway to environmental work. To meet this continuing student demand, we are in the midst of hiring three permanent faculty dedicated to the MES program. Last year Dr. Erin Martin, who has taught in MES since 2012, was hired for the first position through a competitive national search. Erin has expertise in biogeochemistry, climate science, chemical oceanography, and freshwater ecology. She also brings tremendous enthusiasm for teaching and mentoring graduate students. This year we are conducting a search for an ecologist; next year we plan to search for an environmental social scientist. This faculty team should provide a nucleus of excellent teaching, mentoring and leadership in MES for years to come.

Equally important to our continuing success is the MES alumni network. One upcoming event, our third annual Thesis Idea Fair, is a great example. Dennis Aubrey, MES 2013, approached me two years ago with the idea of an event where local government agencies and NGOs could pitch their most pressing research questions to students who were thinking about topics for their candidacy papers and thesis projects. He offered to organize the event; I embraced the idea. This year's event took place on November 10, 2015, and included representatives (many of them MES alums) from more than a dozen environmental organizations. We look forward to this continued event and other similar MES alumni partnerships.

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The Art of Science: Or how I learned that regression curves can be (partially) based on intuition

By Rebekah Korenowsky, 2nd year MES student.

This summer I was fortunate enough to take on an internship with the Washington Department of Natural Resources (DNR). The task involved hydrologic modeling of 14 gauged stream sites in the Olympic Experimental State Forest (OESF). I was put up to it by my great friend, Michele, who had already been working for DNR in various capacities. She heard they were looking for someone with hydrology experience. Luckily at some point in the past, I must have told Michele about my interest in water and how it flows over rocks, because she got me in contact with Teodora "Teddy" Minkova, OESF's research and monitoring manager and the rest is somewhat history.

The OESF has a non-contiguous area of 270,000 acres on the western Olympic peninsula of mostly temperate rain forest. It also boasts a dense stream network and an average precipitation rate of 140 inches/year, steep terrain, quick growing trees, and habitat for Northern Spotted Owls, Marbled Murrelets and salmon. Needless to say this place is special, and I was stoked to be asked to work there.

The project I was tasked with was to create rating curves for 14 headwater basins spread throughout the forest. Rating curves are regression plots used in hydrology to relate the height of the water to the volume of water flowing through a particular cross-section of the stream. My project proposal also required a report at the end to summarize my findings and provide some guidance for OESF researchers to continue. What all this beauty and forest was actually going to represent for me was a long summer spent in a cubicle in an office staring at multiple computer screens and learning a new programming language.

I didn't realize, though, that I was totally into that. This was my first 9-5 job in an office, and I learned to love the ritual of it all. As the title of this post suggests, doing hydrologic statistics turns out to be more of an art than a science at some point. I had to make decisions on when the channel changed so significantly that the rating curves were no longer relevant, but without any number or percent threshold for making that determination. I spent a lot of time flipping back and forth between the various graphs that another OESF researcher, Warren Devine, helped me to create in R (and with a lot of work in JMP as well – so pay attention in Research Design and Quantitative Methods, kids!). I was attempting to figure out just what exactly had happened to the flow and channels at certain points in the past. It was thrilling, like solving a mystery. When the graphs all finally started to make sense, I was able to determine if erosion or bed aggradation had occurred and in some cases even pinpoint the storm that moved all that sediment around.

As cool as this project was, it was also extremely time consuming. The report was originally suggested at 10-15 pages, and as I write this blog post it currently sits at 188 pages, including the many, many graphs that we created. That's longer than most master's theses, and it's still not even finished!

I think a large part of the reason for my incredible productivity stems from all the support that I received. Teddy is the supervisor that most people could only dream of; she gave me the space to really dig in and learn things on my own, but was always there with answers when I needed them. And as mentioned, Warren was integral in getting all of the data organized and visualized, as well as to listen to me talk through my many hypothesized interpretations. I also received guidance from Greg Stewart, a geomorphologist with the Northwest Indian Fisheries Commission, as OESF did not have any hydrologists on staff at this time. Greg was the one who was able to help me figure out what needed to be done and how.

In my notes from a phone conversation I had with Greg I wrote, "Reports take time!" and I think that may be the most solid advice anyone has ever given me. I feel immensely more prepared to write my thesis after going through this experience and am looking forward to working on projects such as this in the future.