**Necromass team-up re AM/EM settings**

Emails:

Hi Rich,

I am writing about some of the work we have going regarding fungal necromass decomposition. We are finishing the prep for sequencing all of the necromass samples Katie buried last fall and should have the data in hand for characterizing the decomposer community later this summer. In working on that project and talking to Craig about some of his research last summer at Cedar Creek, I am wondering if we might all benefit from combining forces on three different projects. The first is Katie's samples, which are testing mass loss patterns for two necromass types - Meliniomyces bicolor (MB) and Mortierella elongata (ME) in AM and EM dominated forest settings. Craig put out the same two necromass types as Katie (MB and ME) in prairies in patches dominated by Helianthemum bicknelli (an ECM forb) or AM grasses. This allows us to look at effects of AM and ECM settings in a non-forest system, which I think would interesting and help broaden thinking about MANE effects. The third project was with done by a former undergrad Erin Andrews (who generated all the necromass for Katie's experiment). Erin put out the same two necromass types (MB and ME) across a oak savannah forest to grassland gradient. Some bags were in the forest, some were at the edge, and some were in the grassland. Erin's projects connect Katie's forest-based work with Craig's prairie-based work.

We have the mass loss patterns for all three experiments (all look similar, with MB decomposing much slower than ME regardless of setting), which were all conducted in the same summer and have similar sampling intervals (so seem like would work well in the same paper). We also have the same sequence data from Erin's samples and we might be able to work in Craig's samples depending on how they have held up since harvest (their storage was different).

My thought is that if you like the idea of combining these datasets, Katie can be the lead author and in charge of the bringing everything together into one manuscript. I will lead the microbial analyses along with Chris, who has excellent experience in this area. Craig and his undergrad assistant Harrison as well as Erin would be co-authors and involved as helping with the methods drafting for their experiments as well as providing edits on the main manuscript. I would ask to be senior author and have you be in whatever author position between Katie and I that you prefer.

I am happy to provide more details and you can chat with Katie as this possibility. If this fits well in her thesis, it would be great to incorporate it as a chapter.

Thanks for considering it,

Peter

Hi Katie,

Attached is the data from the Cedar Creek studies. Sorry for the long delay.

FYI, there's something weird about the Cenococcum decay rates. Previous work suggests it should be one of the slowest to decay due to its high melanin content, but in this dataset its the fastest to go. THe culture we used was isolated from Cedar Creek, so it may be phenotypic plasticity, which would be cool. Two people grew it independently for the two trials and got similar results, so it probably wasn't lab error in culturing. One possibility is the amount of O2 in the media could be affecting melanin content, a second is that there are two separate fungi (C.geo and something else) growing together in the master culture.  If the latter ends up being the case, we may not want to include it in the study.  I'm going to meet with Peter later this week and talk about it. We should be able to sequence it and figure out contamination pretty easily.

If you have any questions about anything let me know. Happy to talk anytime.

Hope your summer's off to a great start!

Craig