

CWT LTER Winter Meeting 2016, January 7 and 8, 2016 DRAFT AGENDA

Thursday January 7

- 8:15 – 8:45 Coffee, tea, light breakfast
- 8:45 – 8:55 Welcome, agenda overview, logistics, introductions
- 8:55 – 9:15 Overview of 2015 USFS Research – Chelcy Miniati
- 9:15 – 9:35 SNAX project - Amy Rosemond
- 9:35 – 9:55 Spatio-temporal trends in extreme rainfall - Marshall Shepherd

9:55 – 10:15 Break

10:15 – 10:45 Overview of proposal structure and elements; Comments from external reviewers; Budget issues; Proposal timeline; Charges to groups - Rhett

10:45 – 11:10 FFE/biodiversity synopsis (Chelcy and Nina)

11:10- 12:10 Initiate group discussions

Lunch (provided)

1:00 - 3:30 Research group work time (writing, research plans, budgets, assignments as appropriate)

3:30 – 5:00 Proposal discussion (all investigators)

5:00 - 6:00 SAC meeting

6:00 Dinner (maybe catered, maybe on your own, we'll get back to you soon)

Friday January 8 – only FFE/biodiversity group and Rhett and anyone else who wants to attend.

8:00 – 8:30 Coffee, tea, light breakfast

8:30 – 12:00 FFE/biodiversity group refines and discusses the proposal

12:00 Lunch (provided)

Coweeta LTER 2016 Winter Meeting Notes
January 7th & 8th

*Prepared and submitted by Jason Love
Coweeta LTER Site Manager*

January 7th 2015

Meeting started at 8:45 am

Attendance: Rhett Jackson, Amy Rosemond, Chelcy Miniati, Nina Wurzburger, Ryan Emanuel, Robert Warren, John Maerz, Jennifer Fraterrigo, Jeff Hepinstall-Cymerman, Bob Cooper, David Leigh, Ted Gragson, Kim Novick, Jennifer Knoepp, Brian Strahm, Fred Benfield, Ed Johnson, Brian Herndon, Meredith Welch-Devine, Jennifer Rice, Larry Band, Jack Webster, Peter Caldwell, Taehee Hwang, Chris Oishi, Marshall Shepherd, Nik Heynen, Jason Love, Maura Dudley

Introductions (Rhett Jackson)

Rhett gave an overview of the agenda.

Overview of USDA Forest Service Coweeta Hydrologic Lab Research (Chelcy Miniati)

- Wettest December on record. Bridge over Shope Fork is out of commission and that section of road will be closed for the next few months. Shope Fork was also damaged in the storm, so please don't travel up the road unless you absolutely have to.
- FY 2014/2015 RWU4353 had 69 pubs, with 90% appearing in the peer-reviewed literature
- Elliott and Caldwell wrote a proposal to the USFS Fire Science program to burn/treat WS31 as part of Future Forests Experiment

Overview of Stream Nutrient Addition Experiments (SNAX) (Amy Rosemond)

- There is a direct relationship between organic matter in streams and the production of stream invertebrates.
- Whole stream enrichments experiment – tested nutrient effects on carbon fates and food web pathways in WS53 & 54 and headwater streams in Dryman Fork watershed
- WS53 (Reference) and WS54 (Treatment); paired watershed approach; added N & P in different concentrations based on what has been seen in the landscape (2:1 all the way to 128:1)
- Used flow proportional nutrient additions; SNAX 3 studied 70 m of stream.
- Findings
 - Nutrient enrichment accelerates riverine particulate organic carbon (POC) loss
 - Nutrient enrichment homogenizes POC diversity
 - Nutrient affect higher trophic levels via alteration of food quantity and nutrient quality (more algae, fewer leaves)
- Nutrient additions allow fungi to access nutrients in leaves; results in high turnover rate and more CO₂ production. Treatment stream had a faster rate of decline of standing stock of leaves
- N & P concentrations predict POC loss rates

- Nutrient poor substrates responded the most – oak and rhododendron responded more to nutrient addition compared the maple and tulip poplar.
- N & P stimulated production of macroinvertebrates, despite reduced carbon pools; same with salamanders.
- P, not N, stimulates *in situ* growth rates of *Desmognathus quadramaculatus* (Black-bellied Salamander).
- Higher prey biomass in salamanders in nutrient-enhanced streams, but most of this increase is from grazers that feed on algae; grazers are higher in P than shredders.
- Pubs: Suberkropp et al. 2010, Rosemond et al. 2015, Bumpers et al. 2015, Manning et al. In Review.

Extreme precipitation events (Marshall Shepherd)

- Extreme daily rainfall is characterized as events greater than 25mm/day (Shepherd et al. 2007).
- Heaviest rain occurs along gulf coast (tropical cyclones) and southern Appalachians in the winter and fall; tropical storms contribute 20-30% of precipitation in SE.
- Principal drivers of hydroclimate variability are four: 1) anthropogenic climate change, 2) natural climate variability and teleconnections, 3) weather modes including topography, and 4) urban rainfall effects.
- We are seeing a positive trend since 1980 of an increase in area of US affected by extreme precipitation events. Trends are stronger in Midwest, Northwest, and Southeast. No apparent trend in the Northeast, Plains, and Southwest.
- PRISM 4 km data matches monthly precipitation from Coweeta precip gauge as CS01
- Daily gridded datasets are becoming more viable, particularly the new PRISM data that also includes the radar data from 2002-2014

A brief history of the Coweeta LTER (Rhett Jackson)

- Rhett gave an overview of Coweeta research (see attached presentation)
- Have done a pretty good job addressing 2014 review comments
- Andrews and Konza proposals were reviewed well, so we are using them as guidelines
- When reviewing proposal, please also include comments so Rhett and the writers know the reason behind the revision
- Budgets have been nearly flat since 1990s, though they are dropping in constant dollars
- \$1,280,000/yr. – overhead = 26%; project management = 40%; this means we have \$435,000/yr. to support direct costs beyond the fixed costs
- We can't spend ahead, i.e. the money comes in annual installments
- UGA returns a portion of the overhead back to the project (about 10%)
- There was discussion on how to write up the "Prior Results" section – how fast do we hold to the old proposal, do we write it as a laundry list?

Group break-out session for FFE

- Kim Novick will work with Chris Oishi on sapflux and NPP measurements at the plot scale
- Chris Oishi would like to contribute to soil respiration and tree respiration
- Pete Caldwell will work at water yield, sediment export, etc at watershed scale.

- Jennifer Fraterrigo would like to work with smaller plots and do seedling transplants, control for mycorrhiza, manipulate drought, and possibly herbs at the watershed scale
- John Maerz would look at abundances and composition of terrestrial salamanders in the plot scale and both terrestrial and aquatic salamanders at the watershed scale; also look at phenotype of salamander species at the plot scale; hybrid zone peak is around 800-900 m
- Robert Warren would like to look at *Aphaenogaster* ants, which are the most abundant invertebrate in our forests; also interested in microbes and decomposition at plot scale
- Ryan Emanuel would like to look at dynamics of soil moisture and isotopes of water and trees, as well as isotope work; also whole watershed soil moisture and groundwater dynamics; may be neat to look at rooting depth (hickories have deep roots) relative to groundwater depth
- Brian Strahm would like to look at cycling rate of C and N in soil at plot scale and ultimately at the watershed scale to look at fluxes of DOC and DON
- Amy Rosemond would like to look at stream chemistry at the watershed scale, litter dynamics quality and quantity, bug production and assemblage; would be good to coordinate with rhodo removal stream folks
- Taehee Hwang would like to scale what we do at the landscape scale; remote sensing to scale up
- Bob Cooper will work with Jeff Hepinstall-Cymerman & Richard Chandler to use experiment to help explain why so many species of migratory songbirds are declining at the southern edge of their range; interested in looking at phenological mismatch between when larval insects are at their peak versus peak nest activity; 2 ha plots could do caterpillar surveys – abundance and timing of caterpillars would be different among the treatments; could look at this at more detail at the watershed scale; possibly do some enclosure experiments to look at trophic relationships; you would lose nesting substrates but perhaps improve food resources

Rhodo Group Feedback

- Rhodo section still seems separate from FFE – need to restructure the text so it is better integrated with FFE
- Have new conceptual model based on Amy Rosemond’s model
- Interactions are context dependent – Clark’s interaction theory captures this, but maybe we need to state this more emphatically
- We have data to create a figure on rhodo recruitment at Coweeta since the 1930s

Regionalization

- For social, we need attribute data for assessing different type of landcover (e.g. farms, impervious surfaces, etc.); Jeff will take the lead on landcover modelling and Steven will look at ?
- Who is doing forest cover regionally and how are we going to do it?
- Who will come up with a diagram for social/regionalization? – Larry Band volunteered to come up with a diagram

FFE

- Diversity/stability – do we want this in the proposal? Consensus is no.

- Are carbon and nutrient retentive systems more diverse? Should we bring this into the proposal? Having a common theme in our response variables would be useful (e.g., leaky systems are bad).
- Interaction theory gives us a good framework to look at many of the questions we are asking – it is broad enough to cover all the different aspects of the proposal and that is its appeal
- Interaction theory provides the framework to pull other theories together
- Would be good to talk about fire as not only being methodologically convenient but also is used in management of forests
- Need to talk about hydroclimate more specifically, differentiating what is happening naturally via topo gradient as well as anthropogenic climate change
- FFE and rhodo projects won't be done in four years, so the 2020 proposal will largely be a continuation of these same projects. Only Socioecology and Regionalization will be significantly different in 2020
- For numbering conventions, can use Chicago Manual of Style
- Hypothesis or question? We will use hypothesis. Hypotheses could be drivers of each response variable that we are trying to predict.

Meeting adjourned at 5:00 pm

January 8th

FFE group met to discuss and work on their section of the proposal.