1. *Which factors are important for allometric relationships when assumptions of linearity are relaxed for northern hardwood* 
   1. *Challenge to set up: assumptions about the model structure*
   2. *Identify a small number of approaches – physiology, vs imposing linear relationships on a log scale*
2. *Is there a difference in allometric relationships between yound stands and old stands.*
   1. *Challenge to set up: there may be heterogeneity in these relationships*
   2. *Make clear that this is not about size, but age.*
   3. *Have people looked for heterogeneity?* 
      1. *Could be specific or more general*
3. *How can we propagate uncertainty into predictions?*

Be sure to introduce everything in introduction.

Establish/characterize novelty

Opening: overall problem – allometry is important and there are challenges.

A few paragraphs elaborating challenges and prior work that sounds important.

End – introduce my study system and questions.

***What should introduction focus on/include?***

*Importance of predicting tree biomass*

* Carbon stock determination – Carbon Market/Offset sales (may belong more in the intro)
* Inability to directly measure tree biomass without great expense and destruction

*Difficulty of accurately predicting tree biomass*

* Complex architecture of trees (especially hardwoods)
* Difficulty in collecting accurate data at large volumes
* Generalizability

*Historic statistical models for allometry*

* Linear regression most common
* No unified methodology – leads to great deal of uncertainty/equation bias in estimates.
  + Specifically with FIA data (Chojnacky paper)
* Dimensional Analysis (Whittaker etc)
* Power function form (simple)
* Simple vs complex allometry

*Information about Hubbard Brook Experimental Forest (HBEF) and specifically the study sites used.*

* Northern hardwood forests in general
* HBEF/WMNF
* Provide Map?

*Information about previous studies in which data was collected.*

* Fahey
* Siccama
* Whittaker
* Fatemi
* Battles
* BattlesRock

How much math should I include?

* Set up the basic relationship between diameter/height and biomass (Power function)
* Should I explain GAM? Or wait until methods section

Should I be setting up my conclusions? Or simply providing general context for the rest of the paper?

How long should it be?

Say what research questions are and convinve reader that theyre interesting

***Other questions for Perry:***

Should I be worried about collinearity when using both height and diameter as predictors?

How can I integrate multiple R scripts easily (call functions defined in a second R script)?

***From Silviculture Term Paper***

The development of predictive models relating low-dimensional tree measurements such as diameter and height to biomass is of great academic and practical interest. Such models seek to overcome the difficulty of measuring biomass directly in order provide the utility of these measurements for research and management decisions (Whittaker 1974; Weiskittel et al 2015). Additionally, concerns over global carbon emissions and the development of carbon markets internationally have resulted in increased interest in the ability to accurately and cheaply determine forest carbon stocking (Weiskittel et al 2015). The development of robust allometric models is limited by the cost and difficulty of accurately measuring tree biomass with necessary replication (Whittaker 1974). This has led researchers to develop a wide-variety of methods for estimation.

Sileshi paper points out importance of documenting uncertainty about parameters – how do I do this?