Draft Statement of Work

1. Develop a suite of robust statistical models to predict effort for the Gulf of Mexico shrimp fishery (Brown + Pink + White + Royal Red + Other shrimp), informed by expert opinion. Preliminary work has established GLM as an appropriate model, and a prior expert panel established coefficients to consider – vessel size, catch, stat zones, depth and season. However, stakeholders at WG should reconsider their relevance and importance, and suggest any other coefficients as appropriate. Ideally these models would start out simple (include only first order factors thought by experts to be the most likely to affect effort) and then become increasingly more complex, eventually including interaction terms.

2. Fit the models using the match data (i.e., landings matched to effort, produced by James Primrose in Galveston) without doing any type of variable selection process. With the shrimp effort issue (i.e., only estimating effort from cELB data that covers less than half of the fleet), the coefficients do not need to be statistically significant from zero – we just need to understand how well the model predicts effort.

3. Perform K-fold cross validation or something similar on all the candidate models, and then select the 'best' model based on selected measurement criteria. Use the 'best' model to predict effort for the shrimp fishery.

4. Perform simulation analysis to demonstrate that the candidate/'best' model represents a significant improvement in terms of reduced bias and/or increased precision over the Ratio Estimator (Important reference docs: NOAA Tech Memo NMFS-SEFSC-300; NOAA Tech Memo NMFS-SEFSC-570; NOAA Tech Memo NMFS-SEFSC-337).