

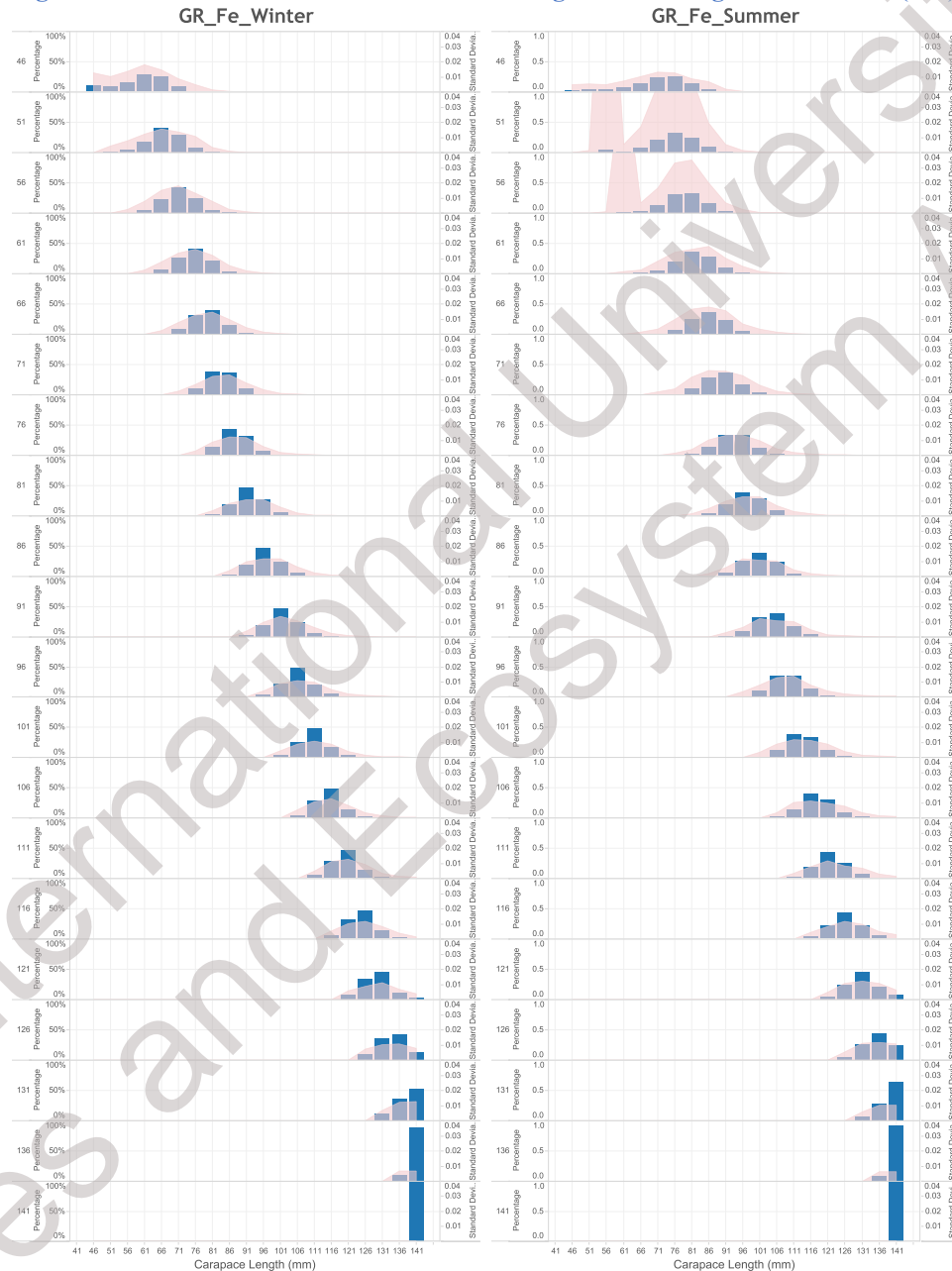
2014 Florida Sea Grant: Developing a size-structured stock assessment model for the spiny lobster, *Panulirus argus*, in the southeast United States

Results – Growth

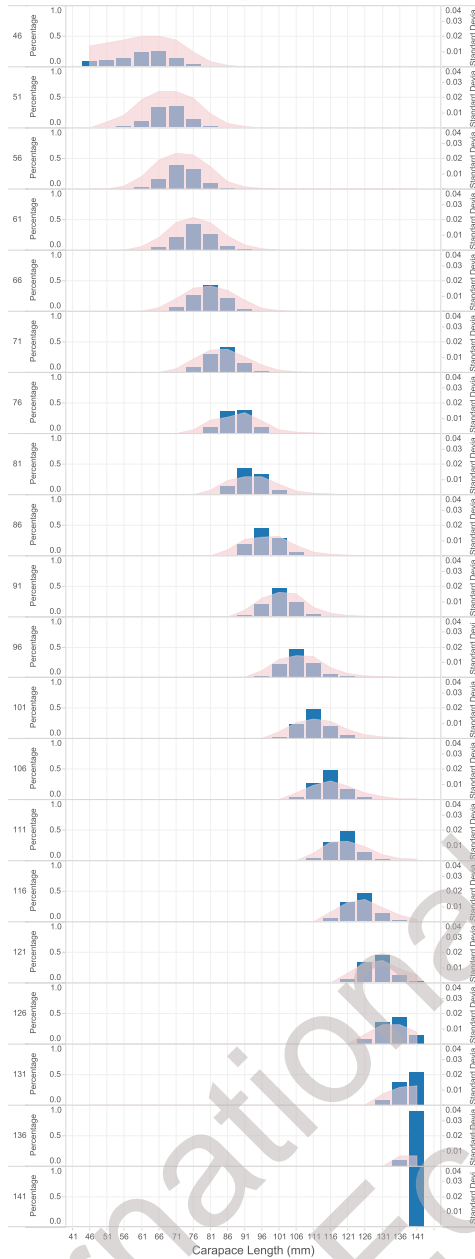
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- The sex-specific growth transition matrices modified from Muller (1997), which referred as the “generalized regression model” in this project, Hoenig and Restrepo (1989), which referred as the “generalized regression model”, and Munro (1974) and Ehrhardt (2008), referred as the “double regression model”, were developed (Fig. 1-3).

Figure 1. Growth transition matrices from the “generalized regression model” (GR).



GR_Ma_Winter



GR_Ma_Summer

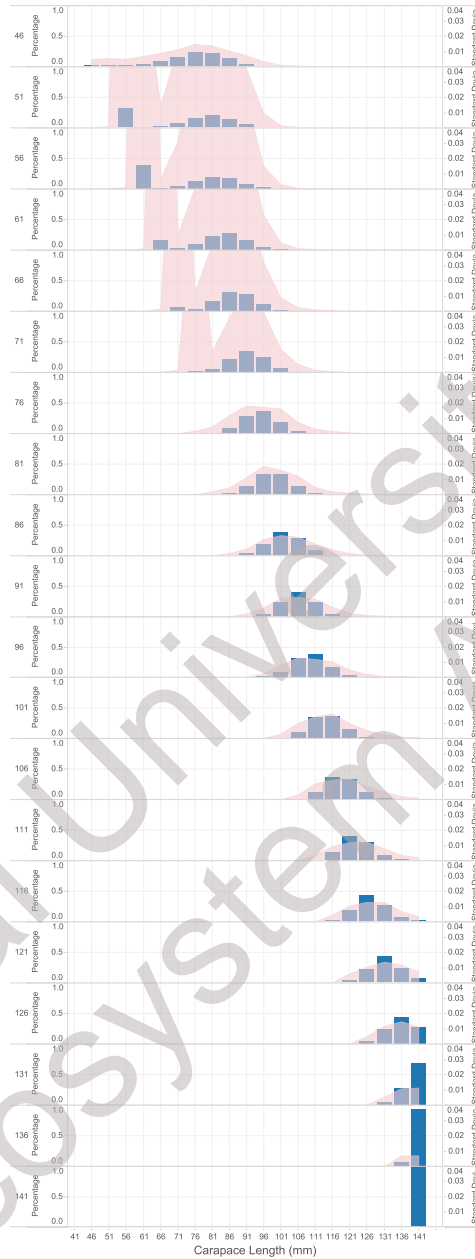


Figure 2: Growth transition matrices from the “likelihood model” (LL).

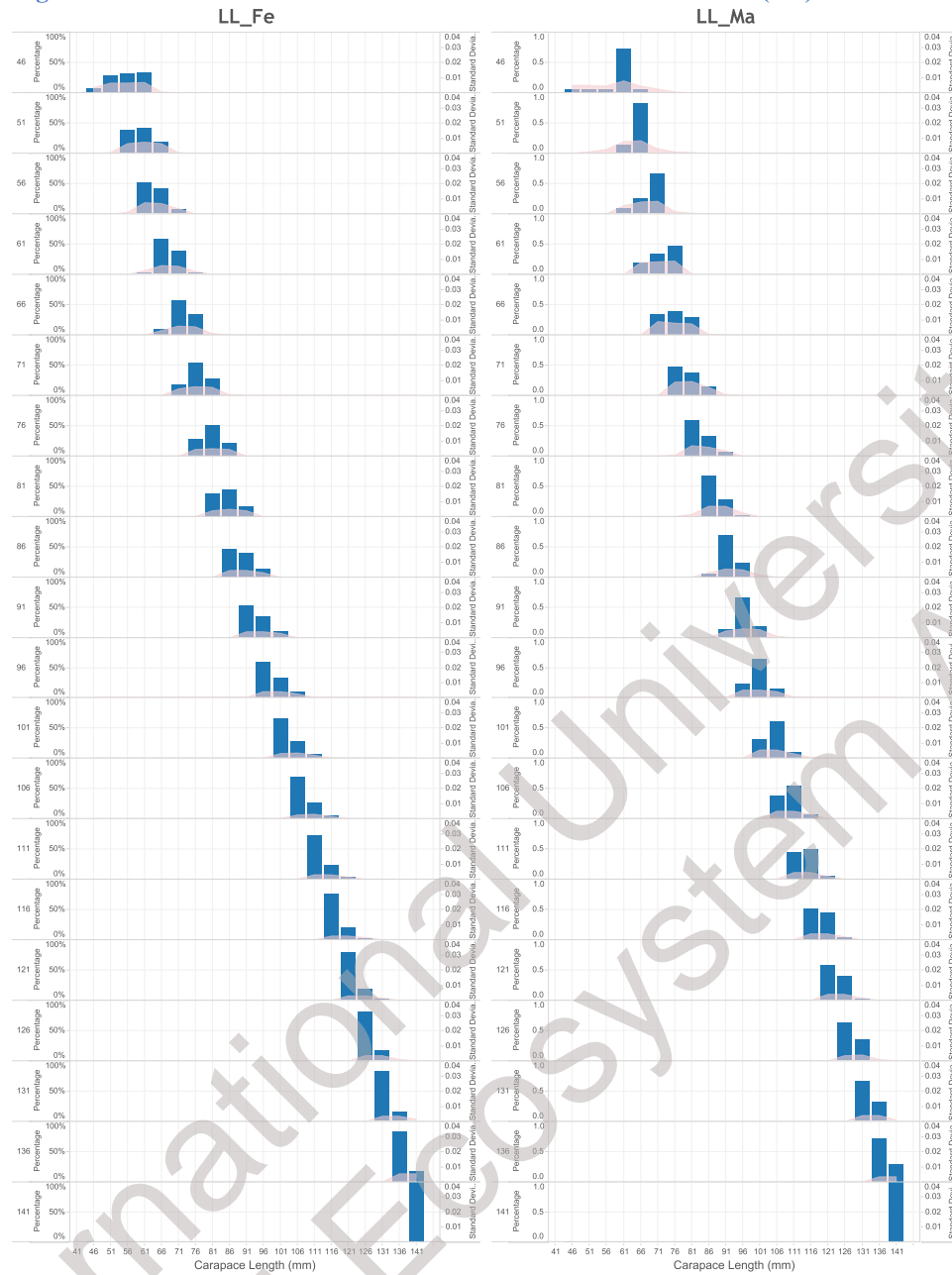
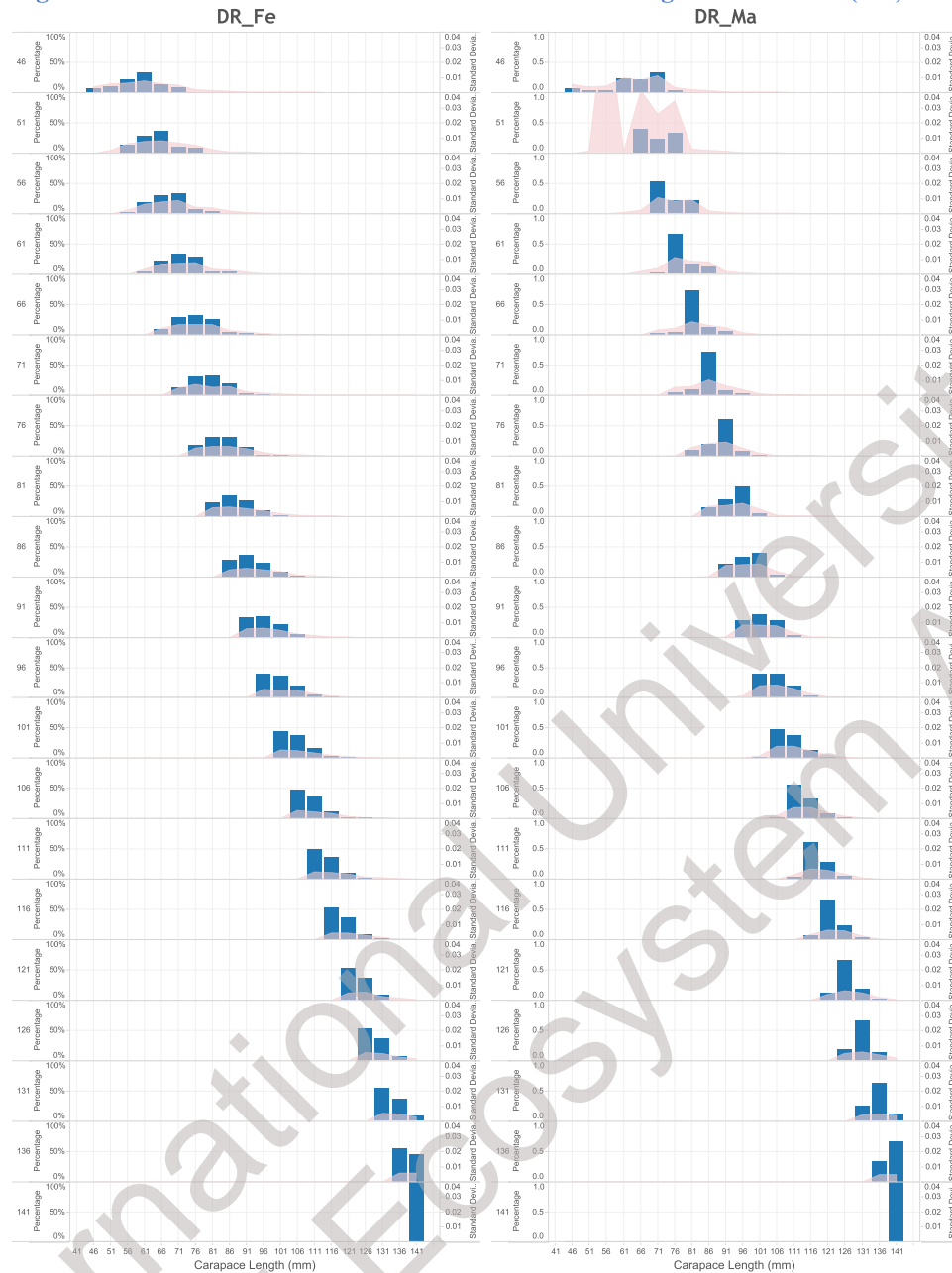


Figure 3: Growth transition matrices from the “double regression model” (DR).



- The simulated growth transition matrix can be compared directly by using Frobenius Norm, which indicates that the likelihood model modified from Hoenig and Restrepo (1989) is more suitable than other two models in developing growth transition matrices. It derives more conservative growth estimate and relatively moderate uncertainty (Fig. 4). However, selection of likelihood weights for data observations should be cautious. This study can improve our understanding about the growth of the Caribbean spiny lobster. The methods can be applied to estimate growth of other crustacean species, and the products can be directly used to future size-structured stock assessment models.

Figure 4. Comparison the general growth transition matrices derived from the “generalized regression model” (GR), the “likelihood model” (LL), and the “double regression model” (DR).

