Ordinary Least Squares Single Regression Landings CPUE Models

Discussion OLS regression models using all lifestages from all surveys with a 1- and 2-yr lag to predict Charleston Harbor watershed (Ashley River, Cooper River, Wando River and Charleston Harbor) landings CPUEs were constructed to find all explanatory relationships. All significant relationships are displayed in the following tables. The CRMS Creek Trawl is the most consistently responsive of the surveys when used in regression modeling. Fifteen significant relationships exist between total CPUEs from the Creek Trawl survey and several 1- and 2-yr.lagged lifestage variables (Table 3). The CRMS Harbor Trawl had one significant explanatory relationship with subadults from the same survey lagged 1-yr (Table 4). The Trammel Net survey had one significant explanatory relatioship with mature females from the Harbor Trawl lagged 1-yr (Table 4), which is the highest correlation (r2=0.36) of all the single regression models.

Although there were several significant regression models constructed using fisheries independent survey life stage abundance CPUEs, no relationships correlate strong enough to be effective models. Using OLS single regression modeling, the six SCDNR fisheries independent surveys used to monitor blue crab populations in the Charleston Harbor watershed are ineffective are ineffective predictors of their own abundance CPUEs.
The next step in this chapter is to put all relevant variables for the Creek Trawl into an exploratory dredge to find combinations of variables to populate multiple regression models. These models will be constucted using the suggestions of the dredge.

Table 3: Significant OLS regression relatioships of Landings CPUE by all lifestages from all surveys.

Dependent Variable	Explanatory Variable	Summary Statistics			
		p-value	r2	F-statistic	Degrees of Freedom
Harbor Trawl (explanatory variable)					
Mean Landings CPUE	Mature Male (1-yr. lag)	0.007659	0.4330	9.928	13
Mean Landings CPUE	Subadult (1-yr. lag)	0.016680	0.3670	7.538	13
Mean Landings CPUE	Total CPUE (1-yr. lag)	0.027710	0.3208	6.140	13
Creek Trawl (explanatory variable)					
Mean Landings CPUE	Immature Male (1-yr. lag)	0.010420	0.4076	8.946	13
Mean Landings CPUE	Sublegal (1-yr. lag)	0.014850	0.3772	7.875	13
Mean Landings CPUE	Subadult (1-yr. lag)	0.019470	0.3532	7.100	13
Mean Landings CPUE	Total CPUE (1-yr. lag)	0.023880	0.3346	6.538	13
Mean Landings CPUE	Juvenile (1-yr. lag)	0.030140	0.3129	5.921	13
Mean Landings CPUE	Immature Female (1-yr. lag)	0.033210	0.3038	5.672	13

Table 4: OLS regression of all non-Creek Trawl survey total CPUEs by all lifestages from all surveys.