A

Total Annual Landings
Charleston Harbor (Combined Watersheds)

$y = -932000\,x + 497\,x^2$

B

Total Annual Landings
Charleston Harbor (Combined Watersheds)

$y = -3990000\,x + 2010\,x^2$

C

Mean Annual Landings CPUE
Charleston Harbor (Combined Watersheds)

$y = 22.1\,x - 0.00962\,x^2$

Figure 1: (A) Total annual blue crab Landings (mean $\pm$ standard error),(B) total annual blue crab landings (mean $\pm$ standard error) subset to 2004-2018, and (C) mean annual landings CPUE (mean $\pm$ standard error) for all reporting areas within the Charleston Harbor watershed (Ashley River, Wando River, Cooper River and Charleston Harbor)
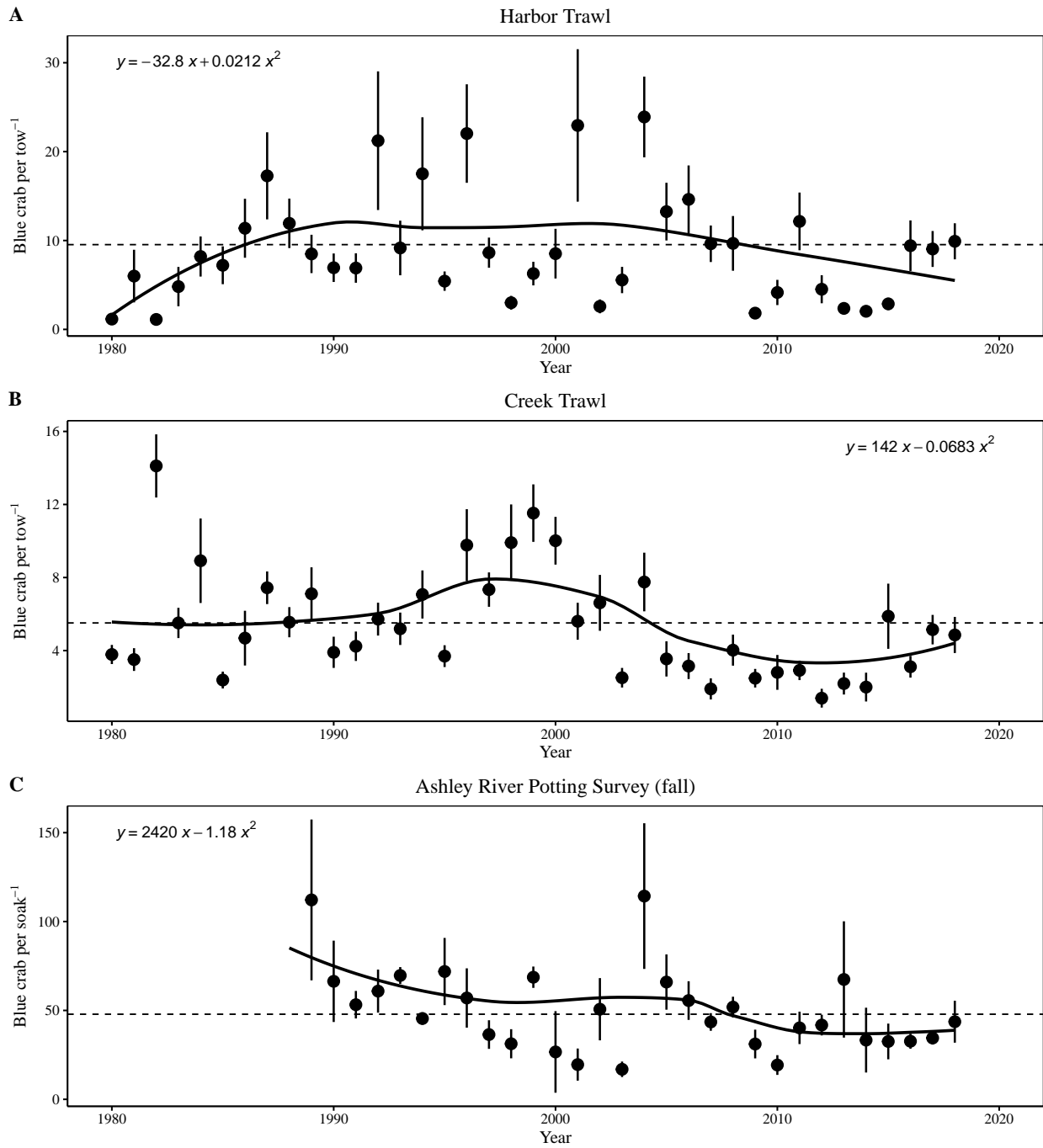
A

Harbor Trawl

$y = -32.8\,x + 0.0212\,x^2$

Blue crab per tow^{-1}

B

Creek Trawl

$y = 142\,x - 0.0683\,x^2$

Blue crab per tow^{-1}

C

Ashley River Potting Survey (fall)

$y = 2420\,x - 1.18\,x^2$

Blue crab per soak^{-1}

Figure 2: Mean annual blue crab (total catch) CPUE (mean ± standard error) for all SCDNR Crustacean Section fisheries independent surveys, including Harbor Trawl (A), Creek Trawl (B), and Ashley River Potting Survey (C).
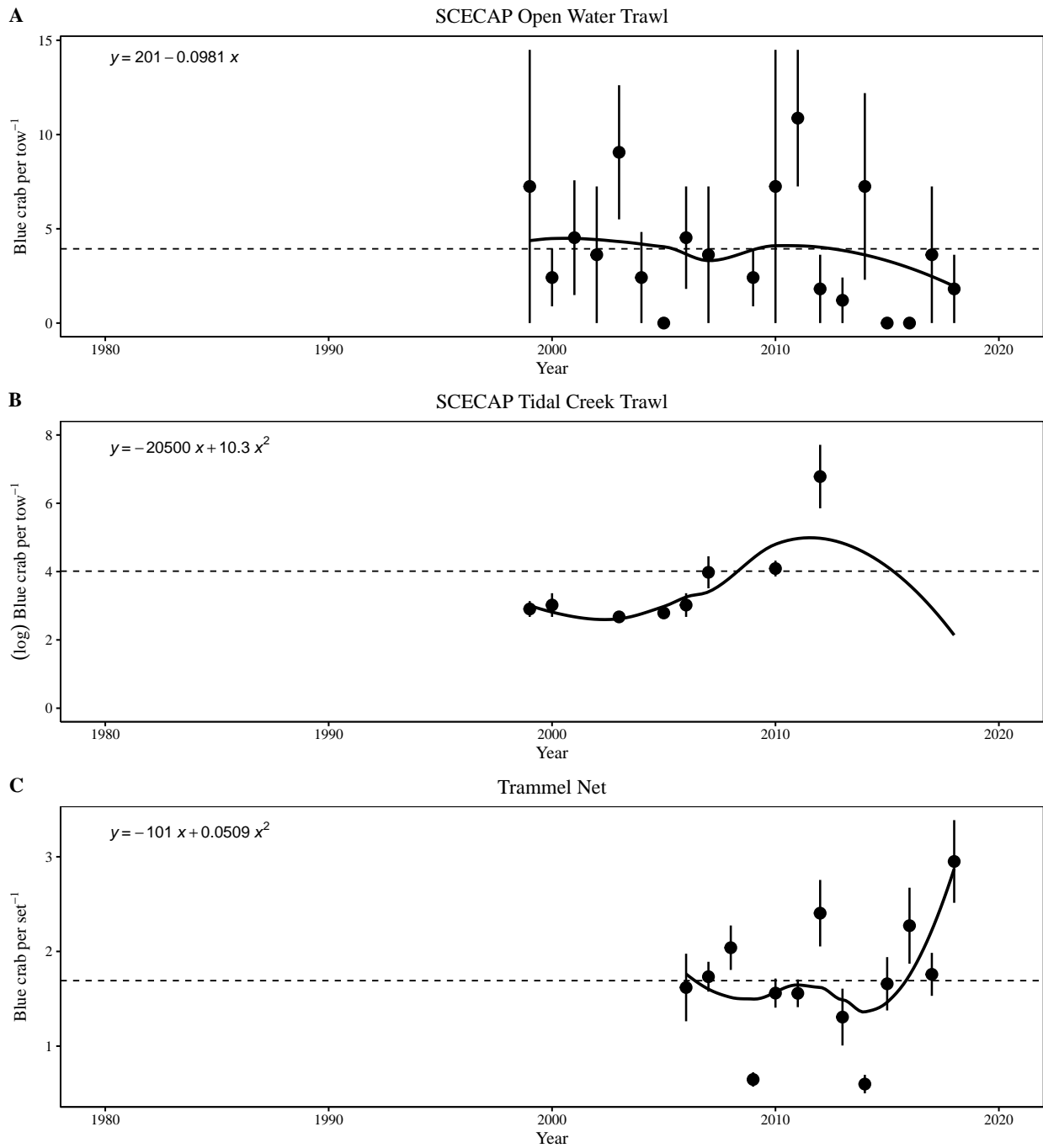
A

SCECAP Open Water Trawl

$y = 201 - 0.0981\,x$

Blue crab per tow^{-1}

B

SCECAP Tidal Creek Trawl

$y = -20500\,x + 10.3\,x^2$

(log) Blue crab per tow^{-1}

C

Trammel Net

$y = -101\,x + 0.0509\,x^2$

Blue crab per set^{-1}

Figure 3: Mean annual blue crab (total catch) CPUE (mean ± standard error) from SCDNR non-CRMS fisheries independent surveys, including SCECAP Open Water Trawl (A), SCECAP Tidal Creek Trawl (B), and the Inshore Fisheries Trammel Net survey

3

Survey	Gear		Sample			Data	
	Gear Method	Gear Type	Sample Area	Sample Interval	Sample Method	N(events)	CPUE Standardization
CRMS							
Creek Trawl	Active	6m Trawl, 2.54cm stretch mesh	Ashley River, Wando River	Monthly, May-Sep	Fixed Stations	1827	Time
Harbor Trawl	Active	4.6m Trawl, 0.6cm D mesh	Ashley River, Charleston Harbor	Monthly	Fixed Stations	2956	Time, Gear
Ashley Fall Potting	Passive	0.6 x 0.6 x 0.46m Pot, 3.8 cm mesh	Ashley River	Monthly, Oct-Nov	Randomized Block w/in a Fixed Station	128	Time
ERS							
SCECAP Tidal Creeks	Active	5m trawl, 1.9cm bar mesh	Charleston Harbor Systemwide	Jun - Aug	Random Stratified	62	Volumetric
SCECAP Open Water	Active	5m trawl, 1.9cm bar mesh	Charleston Harbor Systemwide	Jun - Aug	Random Stratified	92	Volumetric
IFRS							
Trammel Net	Passive	183 x 2.1m trammel net	Charleston Harbor Systemwide	Monthly	Random Stratified	4736	None (Total)

Table 1: SCDNR fisheries independent survey methodology

Survey	Total CPUE	Size			Legal (Size)		Class (Sex/Maturity)			
		Juvenile	Subadult	Adult	Legal	Sublegal	Immature Female	Mature Female	Immature Male	Mature Male
CRMS										
Creek Trawl	X	X	X	X	X	X	X	X	X	X
Harbor Trawl	X	X	X	X	X	X	X	X	X	X
Ashley Fall Potting	X				X	X				
ERS										
SCECAP Tidal Creeks	X	X	X	X	X	X				
SCECAP Open Water	X	X	X	X	X	X				
IFRS										
Trammel Net	X									

Table 2: Lifestage data for blue crab by SCDNR fisheries independent survey

Table 3: OLS regression of total Creek Trawl CPUE by all lifestages from all surveys.

Dependent Variable	Explanatory Variable	Summary Statistics			
		p-value	r2	F-statistic	Degrees of Freedom
Total CPUE	Subadult (1-yr. lag)	0.007774	0.1809	7.949	36
Total CPUE	Adult (1-yr. lag)	0.031200	0.1225	5.028	36
Total CPUE	Immature Female (1-yr. lag)	0.050070	0.1025	4.111	36
Total CPUE	Immature Male (1-yr. lag)	0.048540	0.1038	4.169	36
Total CPUE	Mature Male (1-yr. lag)	0.002197	0.2321	10.880	36
Total CPUE	Sublegal (1-yr. lag)	0.025290	0.1314	5.448	36
Total CPUE	Legal (1-yr. lag)	0.031200	0.1225	5.028	36
Total CPUE	Total CPUE (1-yr lag)	0.019060	0.1434	6.027	36
Total CPUE	Subadult (2-yr. lag)	0.001926	0.2432	11.250	35
Total CPUE	Immature Female (2-yr. lag)	0.010380	0.1733	7.337	35
Total CPUE	Immature Male (2-yr. lag)	0.004023	0.2131	9.481	35
Total CPUE	Mature Female (2-yr lag)	0.019000	0.1473	6.048	35
Total CPUE	Mature Male (2-yr. lag)	0.030760	0.1265	5.067	35
Total CPUE	Sublegal (1-yr. lag)	0.004317	0.2102	9.316	35
Total CPUE	Total CPUE (2-yr lag)	0.004898	0.2050	9.024	35

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

Dependent Variable	Explanatory Variable	Summary Statistics			
		p-value	r2	F-statistic	Degrees of Freedom
Harbor Trawl					
Total CPUE	Harbor Trawl Subadult (1-yr. lag)	0.02906	0.12890	5.181	35
Trammel Net					
Total CPUE	Harbor Trawl Mature Female (1-yr lag)	0.04651	0.36137	5.028	11

A

Creek Trawl CPUE
by Creek Trawl Subadult (2−yr. lag)

$R^2 = 0.2432$

P−value = 0.001926

Creek Trawl CPUE year^{-1}

Creek Trawl subadult CPUE (2−yr lag) year^{-1}

B

Creek Trawl CPUE
by Creek Trawl Mature Male (1−yr. lag)

$R^2 = 0.2321$

P−value = 0.002197

Creek Trawl CPUE year^{-1}

Creek Trawl mature male CPUE (1−yr lag) year^{-1}
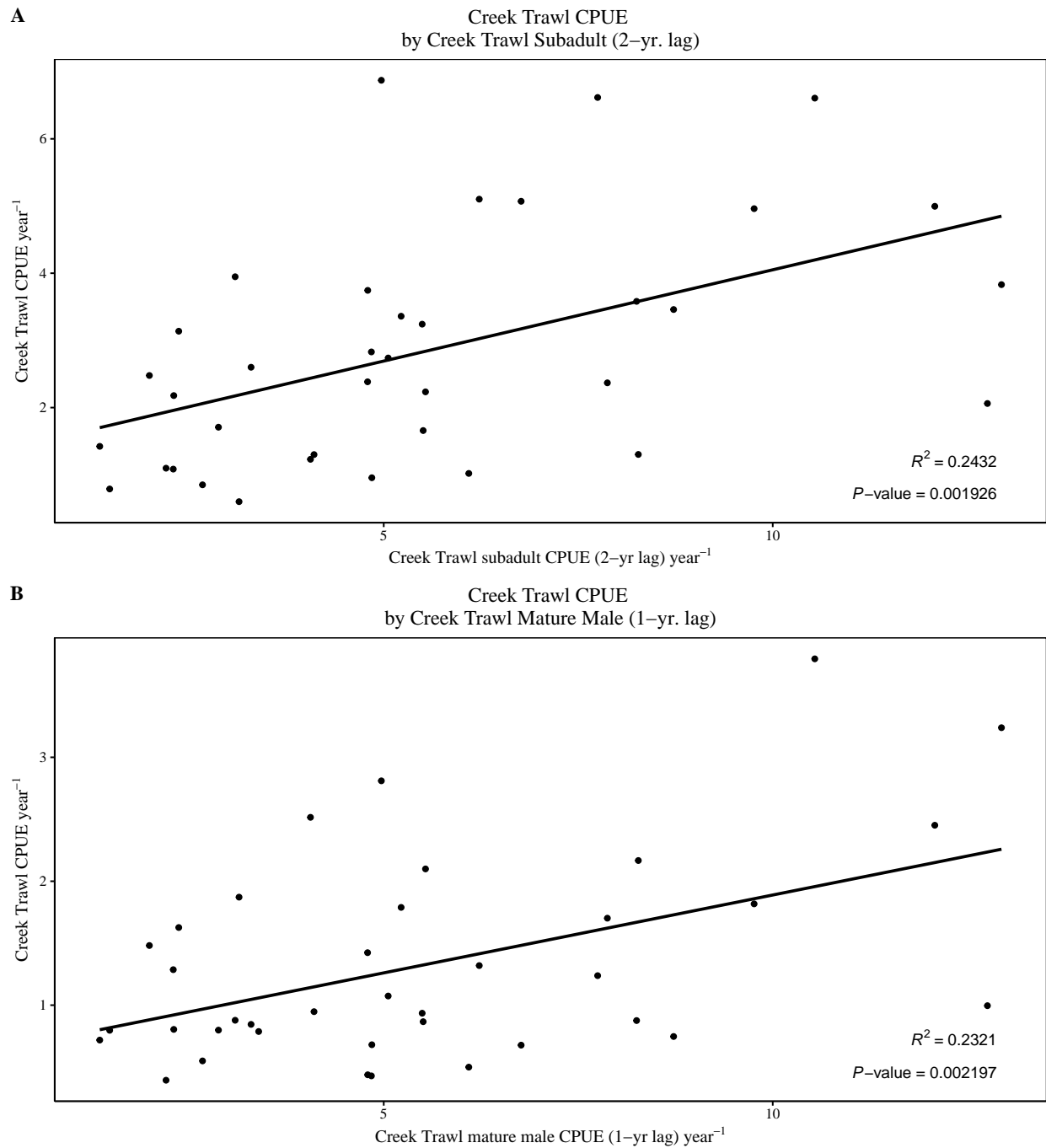
Figure 4: Ordinary Least Squares regression plots of most significant explanatory relatioships using lagged variables to predict survey total CPUEs. Mean annual Creek Trawl total CPUE by Creek Trawl subadults with a 2-yr lag (A), mean annual Creek Trawl total CPUE by Creek Trawl mature male CPUE with a 1-yr. lag (B).

Table 6: OLS multiple regression model results suggested by the dredge with all main effects significant.

Predictors	CPUE Estimates	CI	p	CPUE Estimates	CI	p	CPUE Estimates	CI	p	CPUE Estimates	CI	p	CPUE Estimates	CI	p
(Intercept)	2.05	0.10 – 3.99	**0.040**	2.09	0.14 – 4.04	**0.037**	2.07	0.07 – 4.07	**0.043**	2.04	-0.01 – 4.09	0.051	2.00	-0.04 – 4.03	0.054
ImmatureMale2	0.83	0.12 – 1.55	**0.024**										1.20	0.43 – 1.97	**0.003**
MatureMale1	1.41	0.26 – 2.55	**0.017**	1.24	0.02 – 2.45	**0.046**	1.36	0.17 – 2.54	**0.026**	1.35	0.15 – 2.55	**0.029**			
Subadult2				0.64	0.07 – 1.22	**0.030**									
Sublegal2							0.38	0.02 – 0.74	**0.039**						
CPUE2										0.31	0.00 – 0.62	**0.049**			
CPUE1													1.35	0.26 – 2.44	**0.017**
ImmatureFemale1													-3.22	-6.30 – -0.14	**0.041**
Observations	37			37			37			37			37		
R^2 / R^2 adjusted	0.335 / 0.296			0.328 / 0.288			0.319 / 0.279			0.310 / 0.270			0.358 / 0.299		

Table 6: 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 7: Significant OLS regression of all non-Creek Trawl survey Total Landings by all lifestages from all surveys.

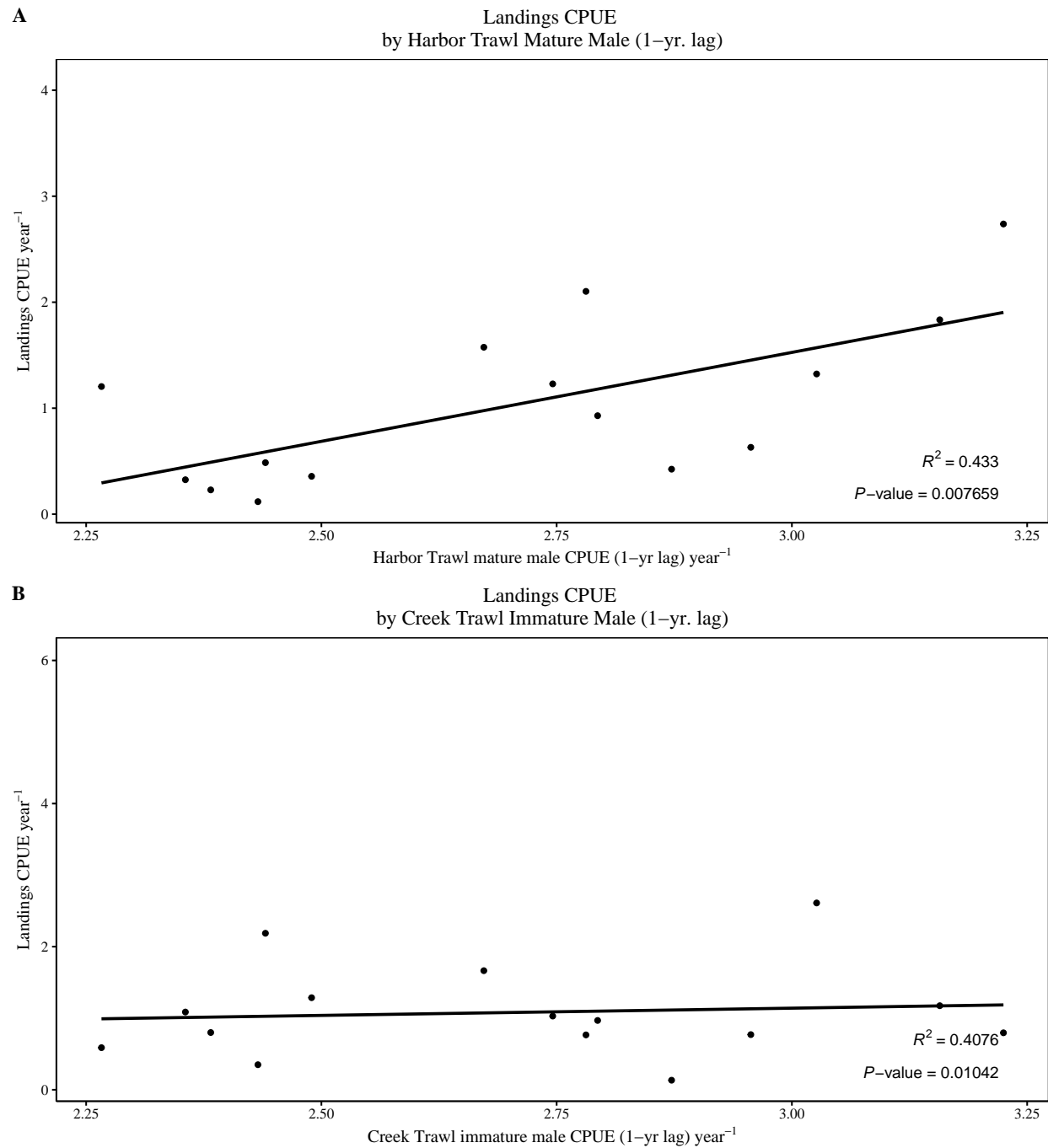| Dependent Variable	Explanatory Variable	Summary Statistics			
		p-value	r2	F-statistic	Degrees of Freedom
Ashley Potting Survey (explanatory variable)					
Total Landings	Legal (2-yr. lag)	0.04050	0.1464	4.631	27
Harbor Trawl (explanatory variable)					
Total Landings	Mature Male (1-yr. lag)	0.04897	0.1034	4.153	36

Figure 5: Ordinary Least Squares regression plots of select significant explanatory relatioships using lagged variables to Charleston Harbor watershed Landings CPUEs. Mean annual landings CPUE by Harbor Trawl mature males with a 1-yr lag (A), and mean annual landings CPUE by Creek Trawl immature males CPUE with a 1-yr. lag (B).