Index of Abundance Using Sum Landings for Charleston Harbor

Discussion Charleston Harbor landings are a annual sum of all landings for four SCDNR designated reporting areas. Areas include: Ashley River (02), Cooper River (10), Wando River (53) and Charleston Harbor (11). The sum of these four reporting areas are considered Charleston Harbor watershed system-wide total landings in bushels per year.

SCECAP Open Water ($\geq$ 100m creek width) subadult ($\leq$ 127mm & >60mm carapace width) clue crab have the most predictive relationship with Charleston Harbor landings when lagged by 1 year (p-value=0.03973, r^2=0.2259). SCECAP occurs annually June and July since 1999. SCECAP is a coast-wide, random stratified station survey, which has varying replicates every year.

A small signal from the CRMS harbor trawl adult crab (127mm carapace width) (p-value=0.04857, r^2=0.1011) is also present. The CRMS Harbor Trawl survey occurs at least monthly at four fixed stations along a salinity gradient from the Anchorage in the Charlesotn Harbor to the I-526 bridge over the Ashley River (approx. 18 river km).

Harbor Trawl time series = 1980-2018
Creek Trawl time series = 1980-2018
Ashley Potting Survey time series = 1988-2018
SCECAP Open Water and Tidal Creek Trawl time series = 1999-2018
Trammel Net Surey time series = 2006-2018

Notes Formating, including plot grid titles, indvid. plot titles and axes, need to be cleaned up.

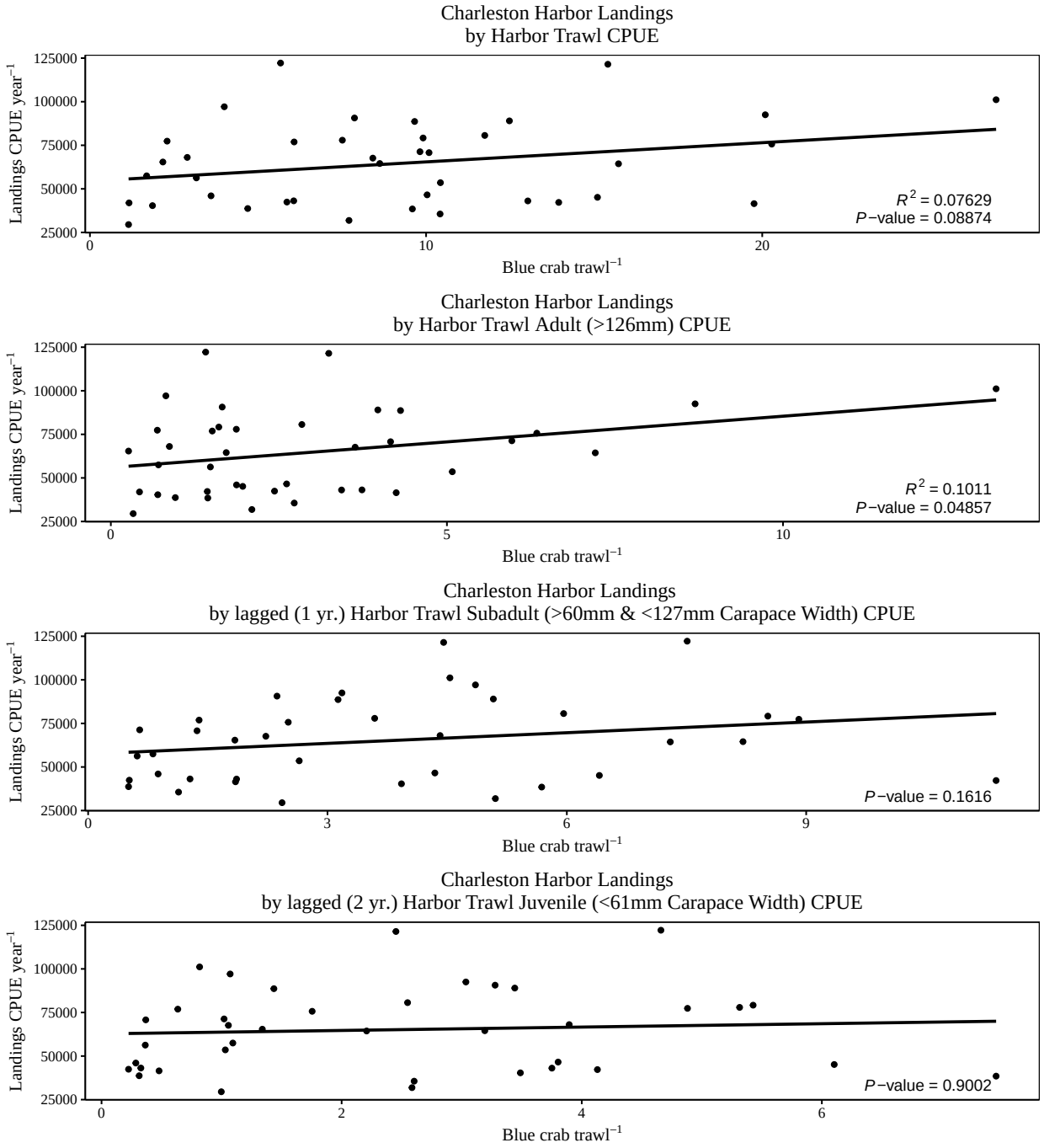

Figure 1: Ordinary Least Squares (OLS) regression of Charleston Harbor watershed (Ashley River, Cooper River, Wando River and Charleston Harbor) total landings (dependent variable) in bushels by CRMS Harbor Trawl abundance CPUEs (independent variables). Mean annual subadult CPUEs (>59mm & <127mm carapace width) are lagged 1 year, and mean annual juvenile CPUEs are lagged 2 years.

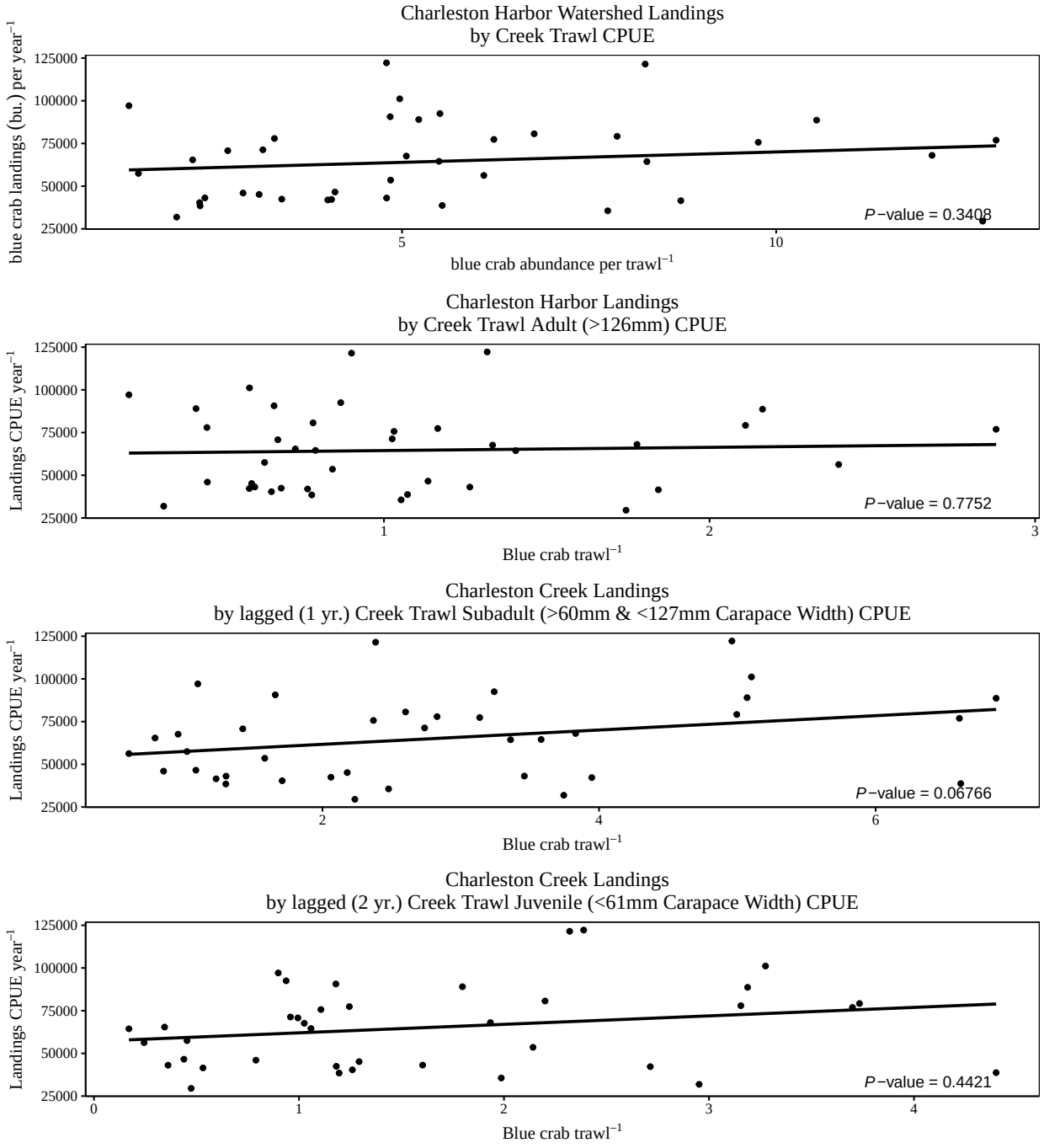

Figure 2: Ordinary Least Squares (OLS) regression of Charleston Harbor watershed (Ashley River, Cooper River, Wando River and Charleston Harbor) total landings (dependent variable) in bushels by CRMS Creek Trawl abundance CPUEs (independent variables). Mean annual subadult CPUEs (>59mm & <127mm carapace width) are lagged 1 year, and mean annual juvenile CPUEs are lagged 2 years.

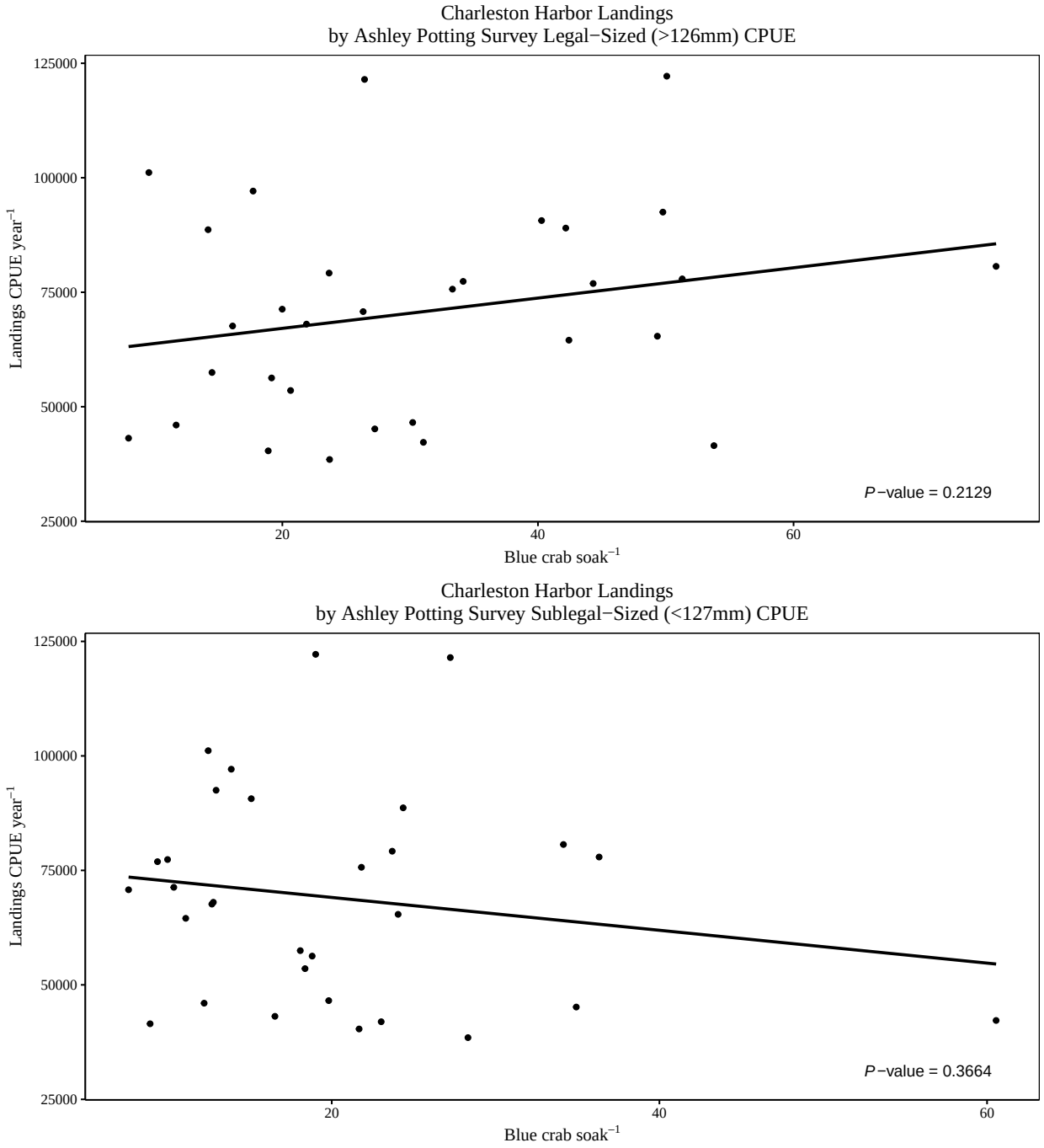

Figure 3: Ordinary Least Squares (OLS) regression of Charleston Harbor watershed (Ashley River, Cooper River, Wando River and Charleston Harbor) total landings (dependent variable) in bushels by Ashley River potting survey abundance CPUEs (independent variables). Mean annual sublegal CPUEs (<127mm carapace width) are lagged 1 year

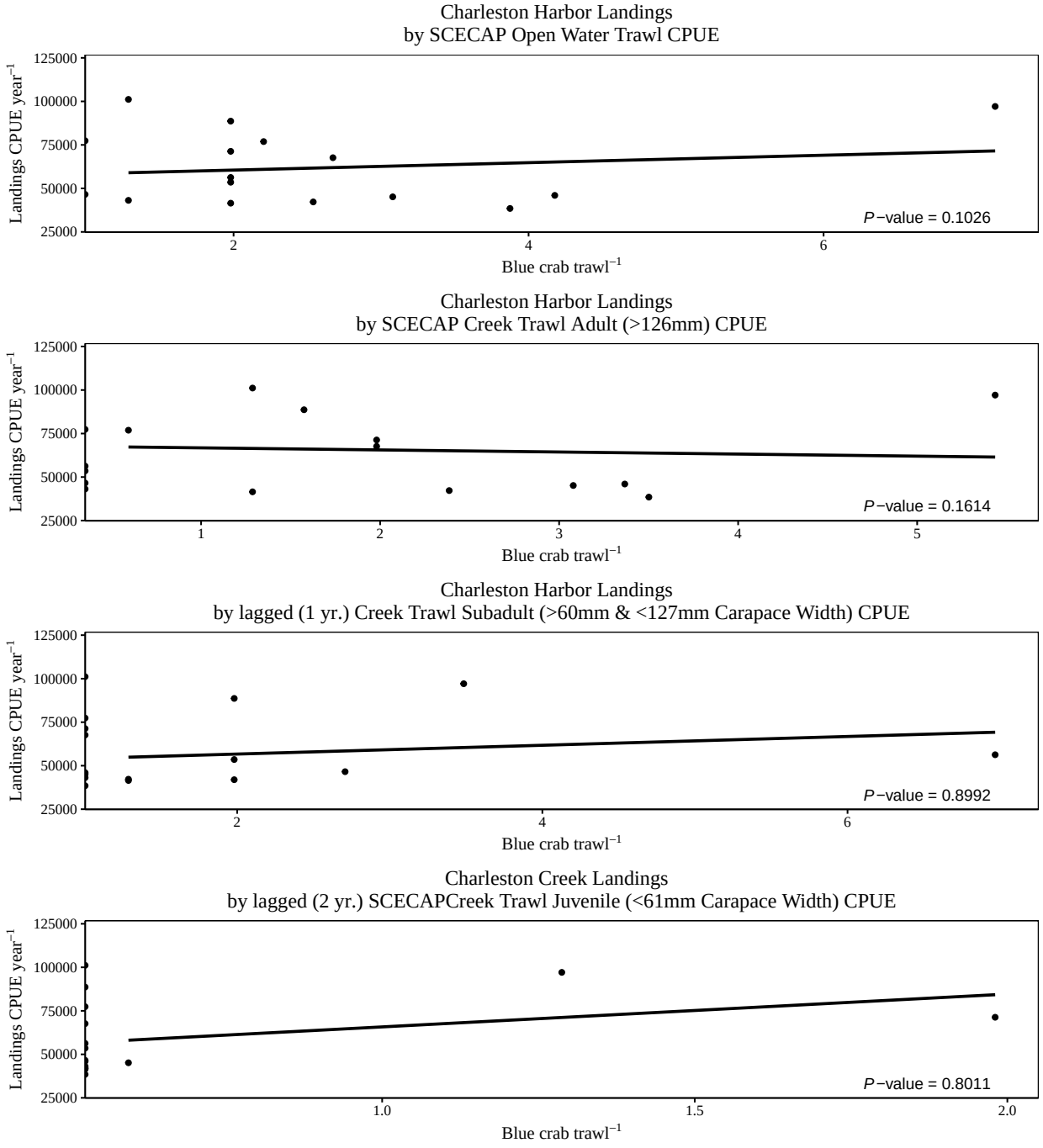

Figure 4: Ordinary Least Squares (OLS) regression of Charleston Harbor watershed (Ashley River, Cooper River, Wando River and Charleston Harbor) total landings (dependent variable) in bushels by SCECAP Tidal Creek Trawl (<100m width) CPUEs (independent variables). Mean annual subadult CPUEs (>59mm & <127mm carapace width) are lagged 1 year, and mean annual juvenile CPUEs are lagged 2 years. Independent variables were logarithmically transformed due to a large outlier

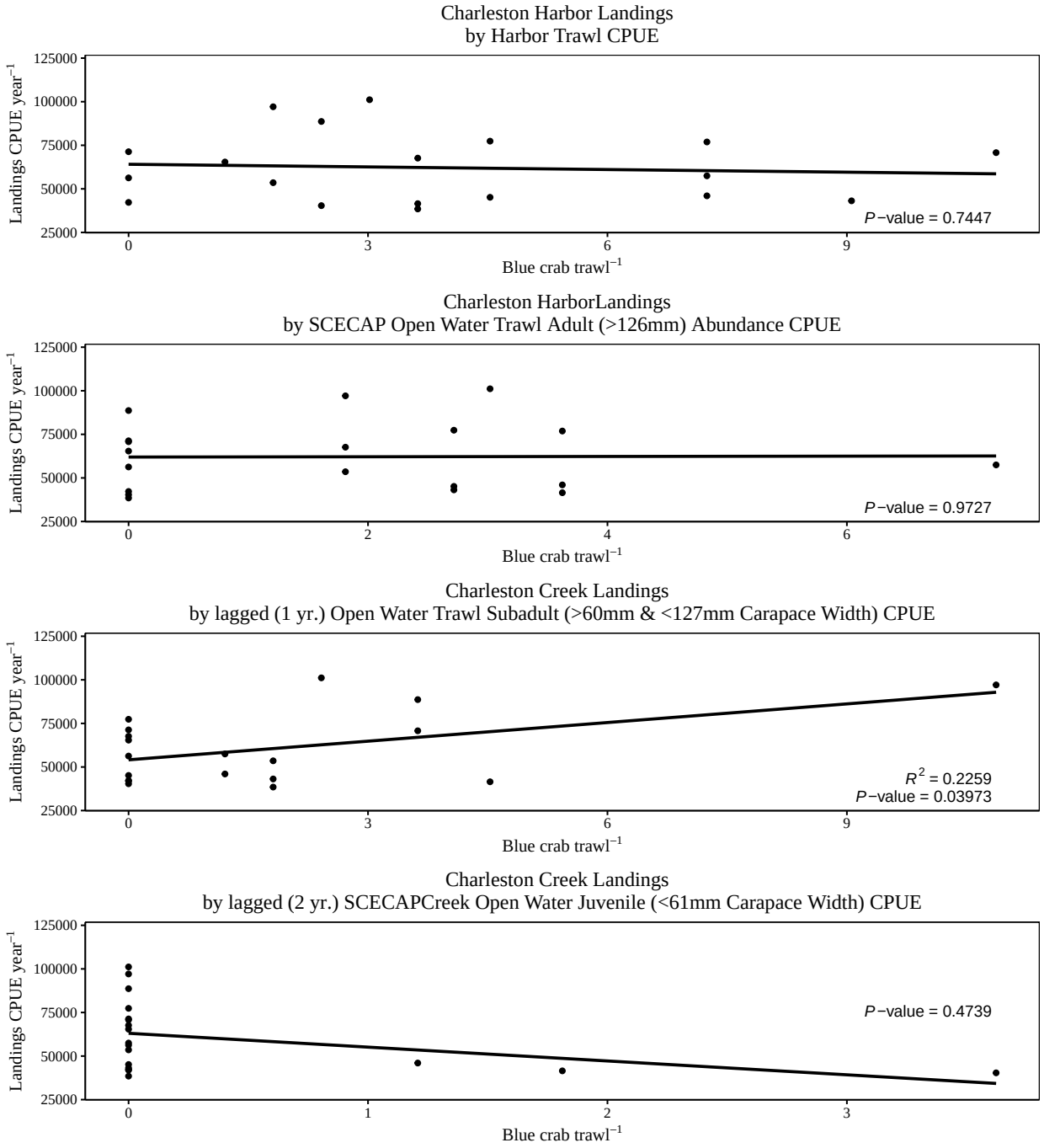

Figure 5: Ordinary Least Squares (OLS) regression of Charleston Harbor watershed (Ashley River, Cooper River, Wando River and Charleston Harbor) total landings (dependent variable) in bushels by SCECAP Open Water Trawl (>100m width) CPUEs (independent variables). Mean annual subadult CPUEs (>59mm & <127mm carapace width) are lagged 1 year, and mean annual juvenile CPUEs are lagged 2 years.