Organic carbon budgets of seagrass ecosystems are mainly composed of estimates from monospecific beds. This creates uncertainties of estimates and perhaps undermines the relative potential of seagrass ecosystems in carbon sequestration. This study provides an empirical estimate of the organic carbon stocks in multi-species meadows (seagrasses and macroalgae) in Gazi Bay. Sampling was done in twenty one 0.25m² random quadrats along three 100m parallel transects. At each quadrat canopy cover and species composition was determined by visual observation. Above-ground materials were obtained through harvesting whereas below-ground organs and soil samples were obtained through coring. Live materials were oven dried and weighed for biomass, sediment Corg was determined through Loss on Ignition (LOI). One way ANOVA was used to test the difference in above and belowground biomass between mixed and macroalgae dominant seagrass stands whereas variation in sediment Corg between mixed and macroalgae dominated seagrass stands was tested using two-way nested ANOVA. Above ground biomass was significantly higher in macroalgae dominated stands compared to mixed seagrass stands (F (1, 18) = 4.414, P <0.01), while below ground biomass was not significantly different between the stands, as can be expected due to the absence of belowground biomass in macroalgae. Sediment Corg was significantly higher in macroalgae dominated stands (F (1, 27) =18.58, P<0.01) but depth effects were not significant in both stands. These results demonstrate the relative contribution of macroalgae to carbon capture and storage in seagrass meadows. Therefore there is need to include macroalgae in global carbon accounting.