

## When Anthropogenic Sediment Disturbances Collide Over Seagrass Beds

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Seagrasses are impacted by a variety of sediment disturbances ranging from erosion to burial. A study of these impacts was performed on *Thalassia testudinum*-dominated mixed seagrass beds along Corpus Christi Bay, TX and adjacent to shipping activities that included large tanker docking and passage, shrimping, dredging and prop scarring. UAS aerial imagery, compared to prior NAIP imagery, suggested decreasing seagrass presence near a tanker docking terminal. Tugboat prop wash directly impacted seagrasses during docking. Potential sediment impacts were hypothesized to exhibit a gradient away from the terminal. Tanker docking events were captured by light loggers and sediment traps which, respectively, recorded light levels near zero at seagrass canopy height for almost 3 hrs, and  $>500 \text{ g/m}^2\text{-d}$  dry sediment settled at 200 m from the terminal. Light attenuation was observed over 800 m away from the terminal. TSS during an undocking operation was 2.7-fold higher compared to immediately prior, and the inorganic content of the sediment was greater during disturbance. Seagrass indicators, including biomass, leaf morphometrics, leaf density, epiphyte biomass, and % inorganic content of epiphytes, exhibited gradients with distance from the terminal to about 500 m. However, some impacts then increased with greater distance from the terminal. A variety of observations suggest erosion from boat wakes and prop scarring dominate this location. Erosional scouring was observed near the terminal in summer, but nearby dredging in winter appears to have resulted in partial burial of seagrasses at the same site. Monitoring efforts were challenged by the rapidly changing anthropogenic disturbances.