TITLE: COMPARING ACOUSTIC- AND AERIAL IMAGERY-BASED METHODS OF EELGRASS MAPPING AT TWO NEW ENGLAND SITES

Eelgrass is an important part of many temperate coastal ecosystems and is often used as a bio-indicator for environmental issues such as water quality. Many eelgrass monitoring programs rely on the analysis of optical remote sensing data, including aerial or satellite imagery. However, these methods are often inhibited by natural attenuation of light with water depth and clarity. Acoustic methods have the potential to complement these optical remote sensing-based datasets. The method described here uses water column data from a multi-beam echo-sounder. It can provide geo-referenced acoustic imagery and depth information needed to document the location, structure, and spatial heterogeneity of eelgrass beds, with more spatial coverage than existing acoustic tools that mostly utilize single-beam echo-sounders. Presented here are two acoustically-derived datasets from Wellfleet, Massachusetts, and Kittery, Maine, classified to characterize the presence/absence, percent cover and canopy height of eelgrass. These data are compared to optical-remote-sensing-derived datasets and sidescan sonar imagery using standard accuracy assessment techniques i.e., error matrices. Analysis also includes correlations of classification accuracies with parameters such as water depth, slope and rugosity. Preliminary results indicate that boundaries of eelgrass beds in acoustic and aerial datasets agree more in shallower water than at the deeper edges, and that eelgrass is detected at lower densities in the acoustic data than in the aerial imagery. These differences are due to the differences in horizontal positioning accuracy and resolution and inherent differences in data collection methods (i.e., continuous transects vs. pixel-based imagery).