We used an EM 3000 multibeam echosounder, operating at 300 kHz, to characterize bottom topography and backscatter of the Shallow-Water High Frequency Acoustics Experiment site (SAX99) off western Florida immediately prior to the emplacement of bottom instruments. The study provided information needed to finalize instrument site selection and characterized variations in backscatter within the study area. Multibeam tracks were closely spaced and were run in several orientations, resulting in a data set ideal for developing classification algorithms for multibeam backscatter data. The multibeam bathymetry shows that the SAX99 site is on a 1 km wide, nearly flat ridge at a water depth of 18.5 m bounded by downslope-trending troughs. When viewed at full resolution our data image the wave oscillation ripples present on the SAX99 ridge. However, the ripples are too small to be observed in the 1 m gridded data. The nearly flat trough floors often have smaller channels and possible slumps within them. Some troughs do not go very far in the onshore-offshore direction, while others cross the survey area. Some troughs form closed topographic depressions that fill with fine-grained sediments. The ridges (medium-coarse sand) have higher backscatter than the troughs (sandy silty mud and mud). There are distinct regional variations in backscatter vs. angle patterns within the SAX99 area. Data collected near the site of one acoustic tower shows that the backscatter at angles to 60 degrees (near nadir) is higher when the sound is perpendicular rather than parallel to the wave oscillation ripples that exist in this area. At other angles the backscatter is more similar. The finer-grained channel has a different backscatter pattern from the sandy ridge, with lower backscatter at nearly all angles measured. Intermediate patterns also exist, suggesting a potentially complex distribution of bottom acoustic properties in this region. This and other studies show that high-resolution, high-frequency multibeam data provides new insights into the form and origin of topography in inner shelf, coastal and estuarine regions and are an important and necessary component of nearshore studies.