

❖ Connections between salinity regimes and oyster restoration and rehabilitation efforts

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Salinity is a primary driver of estuarine species distributions, including those of the eastern oyster *Crassostrea virginica*. Historical records from studies of diverse estuarine systems speak forcefully to salinity concerns when considering oyster reef distributions and oyster habitat enhancement, primarily then for commercial harvest. Past studies note that at higher salinities, the “enemies” of oysters are so numerous and diverse that oyster reefs only occur where oysters have a refuge, most notably intertidal environments. Lower salinity habitats are the primary alternative refuge for oysters from more marine-adapted foes. While *Perkinsus marinus* (= Dermo) acted recently to limit oyster populations in North Carolina in moderate to high salinity waters (e.g. 20+ ppt), predators and boring sponges appear to now play a more substantial role in preventing oyster reef development. Restoration projects that place new reef foundation materials subtidally in moderately high to high salinity waters are doomed to fail, as exemplified by oyster population collapses on the two brood stock sanctuaries in eastern Pamlico Sound. However, as salinities decline, so too typically does the supply of oyster larvae. Thus it is imperative for restoration practitioners to fully understand how spatial and temporal variations in salinity impact the potential for oyster reef growth and to realize that natural and human alterations to coastlines have changed estuarine salinity regimes to the point that historical distributions offer no guidance for present-day restoration efforts. Today’s restoration efforts need to seek a balance between providing a refuge from biological stressors and larval supply, and perhaps finding the means to overcome this disparity.