



Oyster Reefs in North Carolina

hardened shoreline reefs natural intertidal reefs

restored subtidal cultch reefs

natural subtidal reefs

restored subtidal sanctuary reefs

image credits: coastalreview.org; lason Fleming; reefinnovations.org





Reefs of Pamlico Sound



646 reefs!

Theuerkauf et al. (in prep), can be found in downloadable NCSU dissertation





Reefs of Pamlico Sound

Reef Type	Number of Unique Reefs	Total Reef Area (ha)	Average Reef Area (ha)	Average Initial Density (ind. m ⁻²)	Average Population Size
Subtidal Natural Reefs	301	934.27	3.12	61	2,307,464
Subtidal Cultch Reefs	53	15.32	0.29	152	438,967
Subtidal Sanctuary Reefs	14	66.02	4.72	670	26,323,847
Hardened Shoreline Reefs	149	2.69	0.10	69	69,653
Intertidal Natural Reefs (Pamlico Sound)	57	10.43	0.28	121	384,183

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Emergence of GIS-based Decision Support Tools



- <u>Challenge</u>: identifying optimal locations in vast water bodies to restore
- <u>How</u>: spatially integrate relevant biophysical and socioeconomic factors





NCDMF Oyster Rehabilitation Efforts NC DEPARTMENT OF Jacob Boy (ROM DENISION Of UMARINE NC Oyster Summit | Raleigh, NC is Marieb 12, 2019



Oyster Rehabilitation Status



Cultch Planting Program

- 10-20 sites (~40-50 acres total) built annually
- Estimated 1,000+ sites built since 1915

Sanctuary Program: 15 oyster sanctuaries

- Average ~40 acres each
- High relief habitat ridges, mounds, patches

Oyster Rehabilitation Status



Science-based

Suitability

anability

Partnerships

Efficiencies

Long-term Monitoring

Measurables

Cultch Planting

Water

Quality

Oyster Rehabilitation Success Stories: Swan Island

Year 1: ~ 20 acres, Year 2: ~ 10 acres, Year 3: ~ 10 acres





North Carolina Coastal Federation

Working Together for a Healthy Coast



Living Shorelines: Another Strategy for Oyster Rehabilitation

Lexia M. Weaver, Ph.D. If You Build It They Will Come: Ongoing and Future Efforts to Promote Healthy Wild Oyster Stocks NC Oyster Summit March 12, 2019

Living Shorelines





The bulkhead above was replaced with a living shoreline.

- Reduce shoreline erosion while protecting and restoring natural shoreline features including salt marsh, oyster and fisheries habitat
- Cost-effective, longer term approaches with little to no maintenance
- Provide better shoreline protection against storms
- Increase shoreline resiliency
- Help to improve water quality



North Carolina Coastal Federation Working Together for a Healthy Coast

Living Shorelines: A Valuable Oyster Restoration Tool



