Best Practices for Planting Salt Marsh and Using Recycled Oyster Shells for Living Shoreline Construction

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Best Practices for Planting Salt Marsh and Using Recycled Oyster Shells for Living Shoreline Construction

• Types of salt marsh grass
• Where to get them
• Cost
• When and where to plant them
• How to plant them

• How to use recycled oyster shells/domes for the construction of living shorelines
Shoreline Erosion
How Living Shorelines and Salt Marsh Stabilize Shorelines and Protect Habitat
Bulkhead Issues
Storm Damage to Bulkheads

Marshes with and without sills protect estuarine shorelines from erosion better than bulkheads during a Category 1 hurricane.

Provided by Dr. Rachel Gittman

Provided by Carter Smith
Marsh Grass Species Planted for Living Shorelines

*Sporobolus alterniflorus* (smooth cordgrass)

*Sporobulus patens* (salt meadow hay)

*Juncus roemerianus* (black needlerush)
Typical Coastal Marsh Zones in NC
Ordering and Planting Times

Order in fall
Plant in April-June (Optimal)
Plant in spring for 2-3 years

Trays or boxes
Trim - “Haircut”
Grow them in a greenhouse
Nurseries that Grow Salt Marsh Plugs

• Garner's Landscaping, Tree Farm & Plant Stand, Newport
  – $0.75 per plug delivered

• Wetland Plants Inc., Edenton
  – $0.75 per plug delivered, 200 min.

• Mellow Marsh Farm, Inc., Siler City

• Lumber River Native Plants, Gibson
  – $0.75 - $0.85 per plug plus delivery charge
When and Where to Plant

- Plant in spring (April- June) for 2-3 years.
- Plant after the sill is in place.
- If planting an unvegetated area:
  - Smooth cordgrass - below high tide line
  - Salt meadow hay and black needle rush - above high tide line
- If planting area with marsh grass present:
  - Plant where that species is already present
- Close together and close to existing grass
How to Plant Marsh Grass

- Dibble bar
- Six inches deep
- Six inches – 1 ft. apart
- One plug per hole
- Fertilizer is optional
Before Planting

After 1 Year
Before Planting

After 3 years

After 6 years
Using Recycled Oyster Shells for Living Shorelines

Loose Oyster Shells

Oyster shell bags

Marsh Toe Revetment

Patch Oyster Reefs

Sill
Sill and Marsh-Toe Revetment Materials

• Recycled oyster shells (loose or bagged)

• Riprap (limestone rock/marl, granite, concrete)

• Sandbar Oyster Company’s Oyster Catcher™
Using Recycled Oyster Shells for Living Shorelines

Patch Oyster Reefs

Oyster Shell Bag Sills

Marsh Grass Plantings
Using Recycled Oyster Shells for Living Shorelines

• The shells of oysters that were harvested and consumed.
• Help to reduce shoreline erosion and create habitat.
Obtaining the Recycled Oyster Shells

- Purchased from seafood companies
  - Quality Seafood, Elizabeth City ($2.85/bu)
- Purchased from trucking companies
  - Roy Rogers ($2.48/bu)
- Donated from oyster roasts
- Restaurants
Making the Oyster Shell Bags
Sunset Beach Waterway Park June 2018
Marl
Stockpiling/Transporting the Bags
Permits

State (NC Coastal Area Management Act)

- Salt marsh planting alone: No permit required
- Marsh-toe revetment/Sills: CAMA General Permits
  - $200 fee
  - Project location map and designs
  - Adjacent property owner signatures
  - Valid for 120 days

Federal (Section 404, Clean Water Act) USCOE

- Regional General Permits Authorized for 5 year intervals
Local Fishermen
Typical Marsh Toe Revetment Schematic

Example of Oyster Shell Bag Marsh Toe Revetment.

Cross-Section/Profile of Oyster Shell Bag Marsh Toe Revetment.
Oyster Shell Bag Marsh Toe Revetments
Oyster Shell Bag Sill
## Oyster Shell Bag Sill Design

**Shoreline**

<table>
<thead>
<tr>
<th>Bottom Substrate</th>
<th>Oyster bag</th>
<th>Oyster bag</th>
<th>Oyster bag</th>
</tr>
</thead>
<tbody>
<tr>
<td>NHW (18 in.)</td>
<td>Oyster bag</td>
<td>Oyster bag</td>
<td>Oyster bag</td>
</tr>
<tr>
<td>NLW (6 in.)</td>
<td>Marl bag</td>
<td>Marl bag</td>
<td>Marl bag</td>
</tr>
</tbody>
</table>

- **6 ft. wide**
- **~ 1.5 ft. high**
Oyster Shell Bag Sill
Sunset Beach Living Shoreline Project 2018-2019
Oyster Bags and Oyster Domes
Oyster Shell Bag
Sills and Oyster Domes

Approximate costs for 50 linear feet:
700 bags, 175 bushels @ $3.00/bu = $525
3 rolls of mesh @ $125/roll = $375
Bagging frame = $100
Labor, $5.00 per bag = $3,500
Plantings, 1,500 plants @ $1.00 = $1,500
Total cost = $6,000 or $120/linear ft.

Oyster domes (approx. 32 domes for 50 linear feet)
~$60-$120/dome ($1,920-$3,840)
Delivery- ~$2,000 per tractor trailer (to Brunswick Co.)
NCCOAST.ORG

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