



Reefmaker Technology A Living Shoreline Structure



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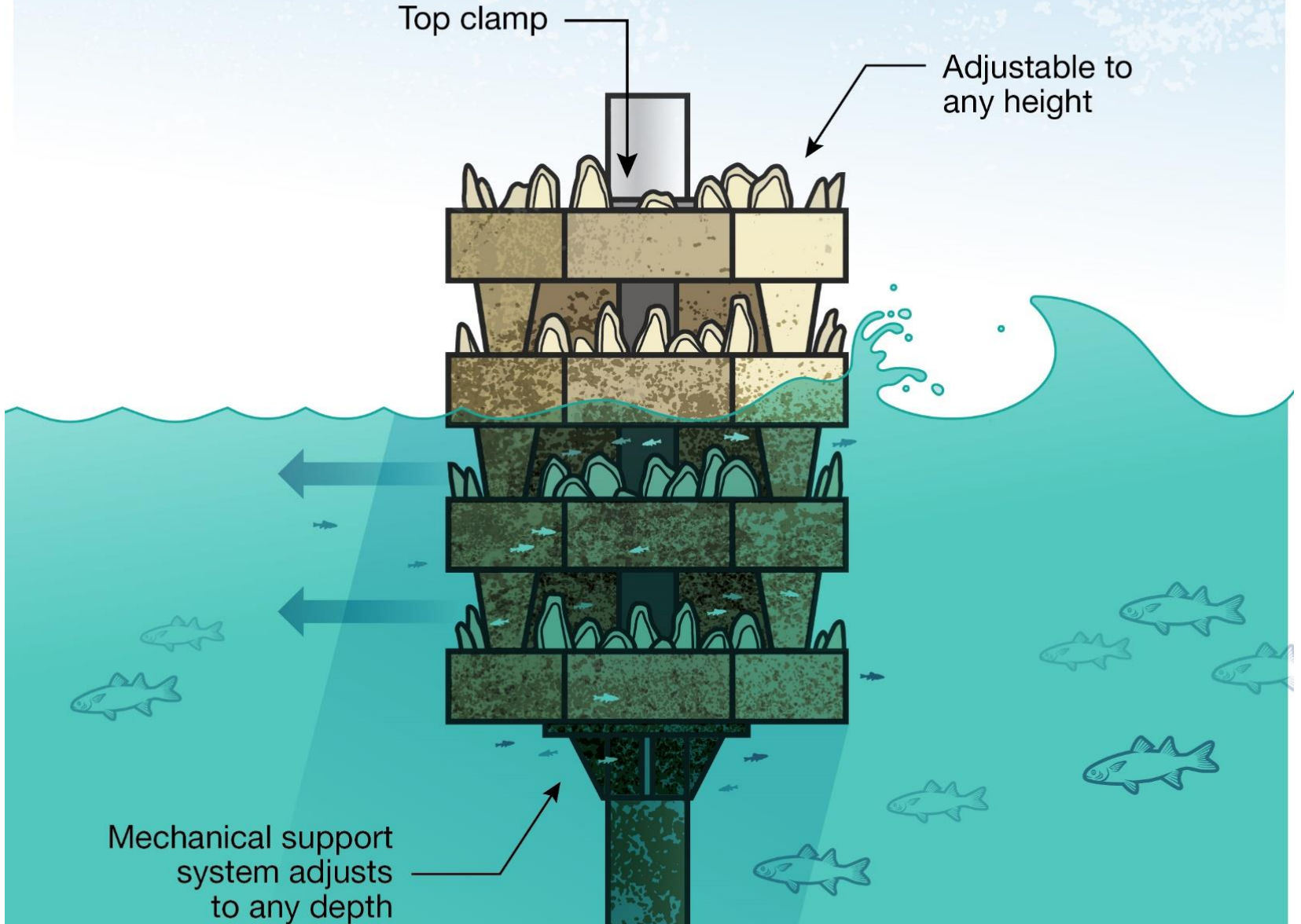
Calm water

Open water

Top clamp

Adjustable to any height

Mechanical support system adjusts to any depth



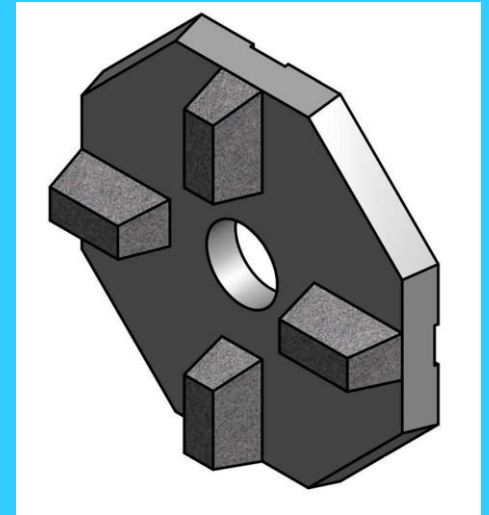
Eco-disks

Currently, Eco-disks implemented for

- Low Energy Wave Environment
 - 20% porosity
 - Octagonal Shaped
- High Energy Wave Environment
 - 20% porosity
 - Square & Octagonal Shaped

Future Eco-disk structures

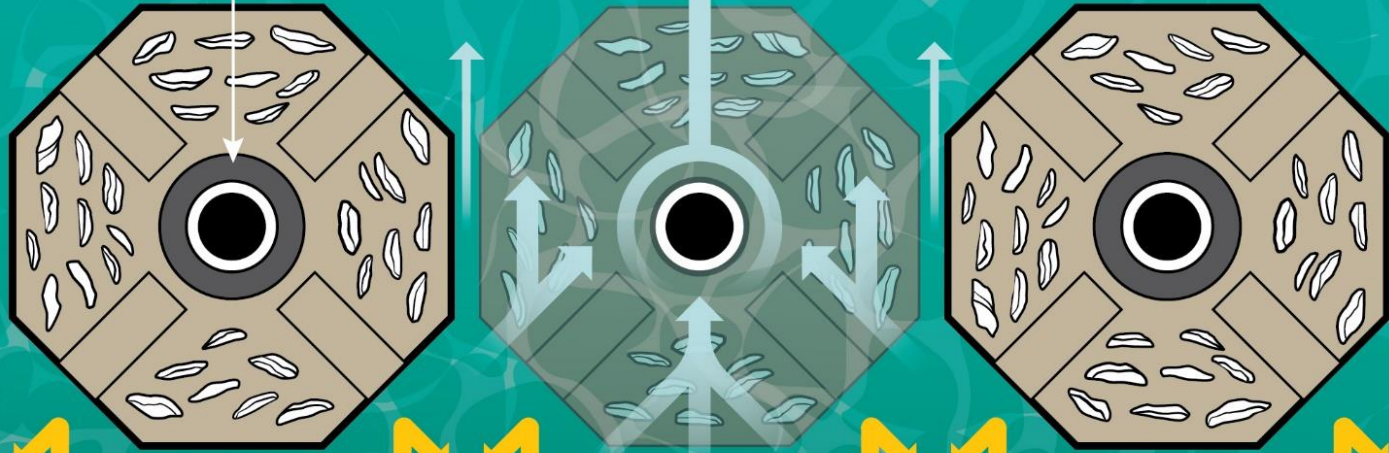
- 0% porosity
- Moderate energy wave environment



Calm water

Top clamp

Diffused wave energy



Wave collisions

Incoming wave

Open water



Reefmaker Habitat

Kip Baker Site (Bogue Sound, Emerald Isle, NC)



Installation & Photo Date: 12/2019

Photo Date: 10/28/2020

Why use Reefmaker Technology?

- Works in horizontally limited areas
- Dissipates destructive wave energy (>60% energy reduction)
- Provides habitat for marine fauna, sessile and non-sessile organisms
- Sets base unit above the substrate
 - Minimizing scour
 - Minimizing sand/sediment re-distribution
- Minimizes 'foot print' impact to substrate – designed for only the piling
- Permits flushing along the entire shoreline
- Allows for modular construction
- Enables easy adjustments to accommodate for sea level rise (SLR)
- Withstood hurricanes, tropical storms & nor'easters



Technology Challenges

- Regulatory
 - Definition of 'Living Shoreline'
 - Landscape position
- Chicken & the Egg
 - Need data to ensure that it works
 - Not willing to implement unproven technologies
- Aesthetics
- Grants/ Funding/ Financing
 - Demonstration projects
 - Monitoring
- Education – adding to the coastal engineering 'toolbox'

"Living shoreline" means a shoreline management practice that provides erosion control and water quality benefits; protects, restores, or enhances natural shoreline habitat; and maintains coastal processes through the strategic placement of plants, stone, sand fill, and other structural and organic materials. When practicable, a living shoreline may enhance coastal resilience and attenuation of wave energy and storm surge.

§ 28.2-104.1(A) of the Code of Virginia

Yes, and Why

- Provides erosion control
- Provides water quality benefits
- Protects, restores, or enhances natural shoreline habitat
- Maintains coastal processes ... (but rest of statement does not fit)
- Enhances coastal resilience
- Attenuates wave energy and storm surge

No, and Why

- Maintains coastal processes through the strategic placement of plants, stone, sand fill, and other structural and organic materials





Potential Solutions

- Update definition of 'Living Shoreline'
 - "... sand fill and/or other structure ... "
- Create 'Proving Grounds' for new technology
 - Grant funding
 - Implement demonstration projects
 - Monitor project/ gather data on technology
- Educate regulatory, engineers & biologists to add the structure to the coastal engineering toolbox



QUESTIONS?

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