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Subsea Grids Supporting Marine Biodiversity

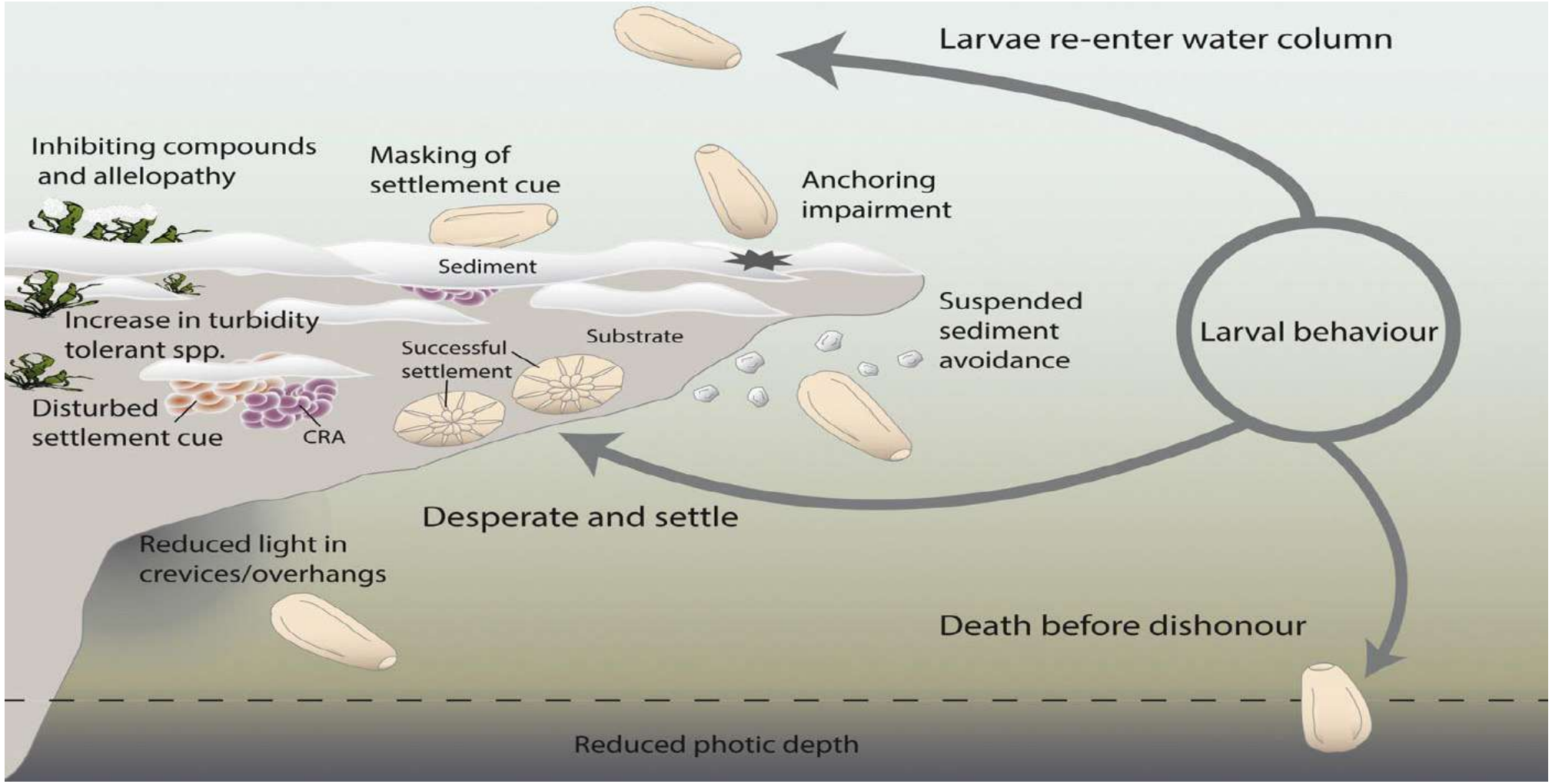
Improving Undersea Resiliency with Nature-Positive Solution

ocean Offshore Coalition for Energy and Nature

Renewables Grid Initiative

October 26, 2023

Learning from Nature



Ricardo et al., 2017

Bio-enhancing Concrete Technology

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Material composition

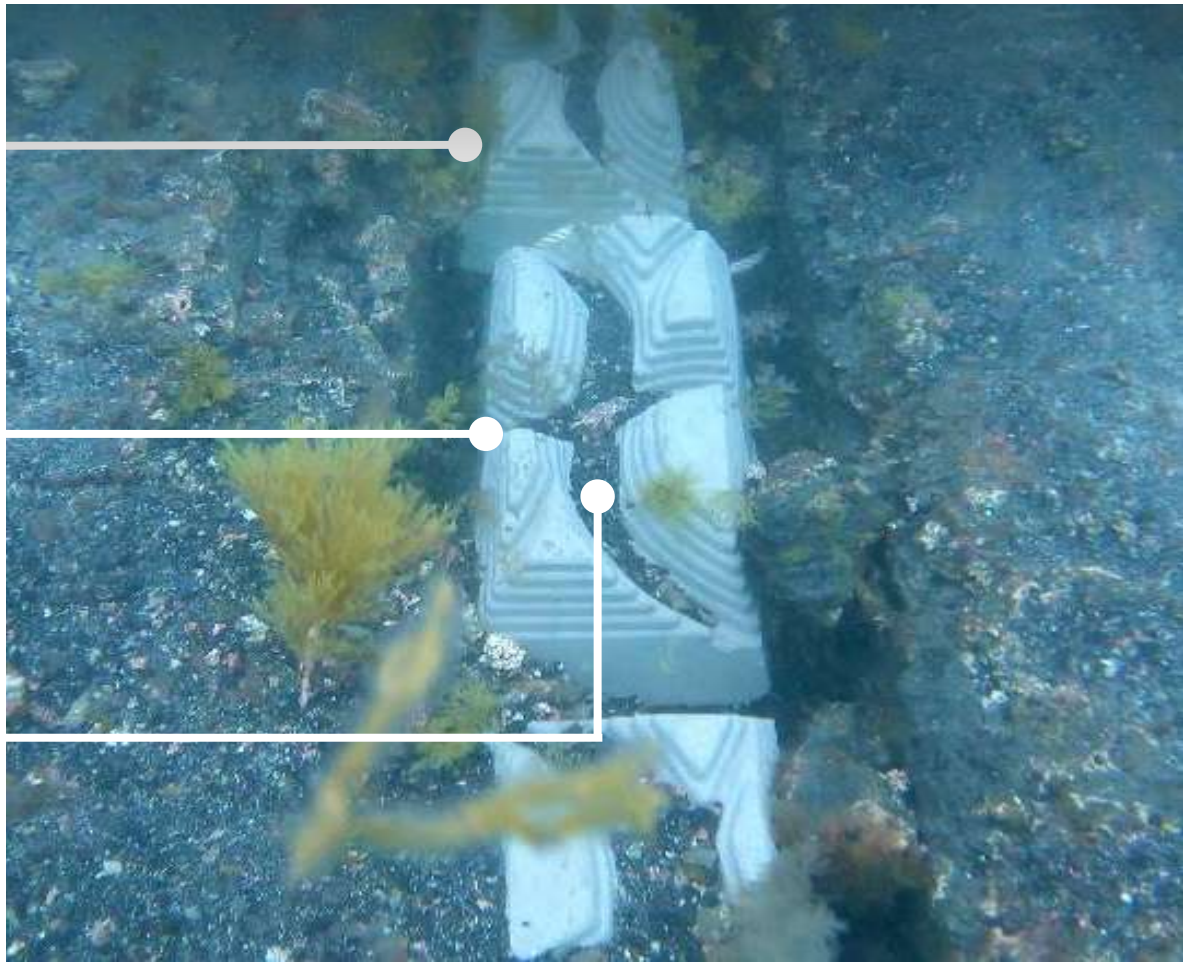
Enhance biological recruitment

Surface complexity

Supports marine life settlement

Nature-Inclusive design

Facilitates growth and survival



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Nature-Positive Solution

Installation, May 2022

10 Months Post Installation, March 2023

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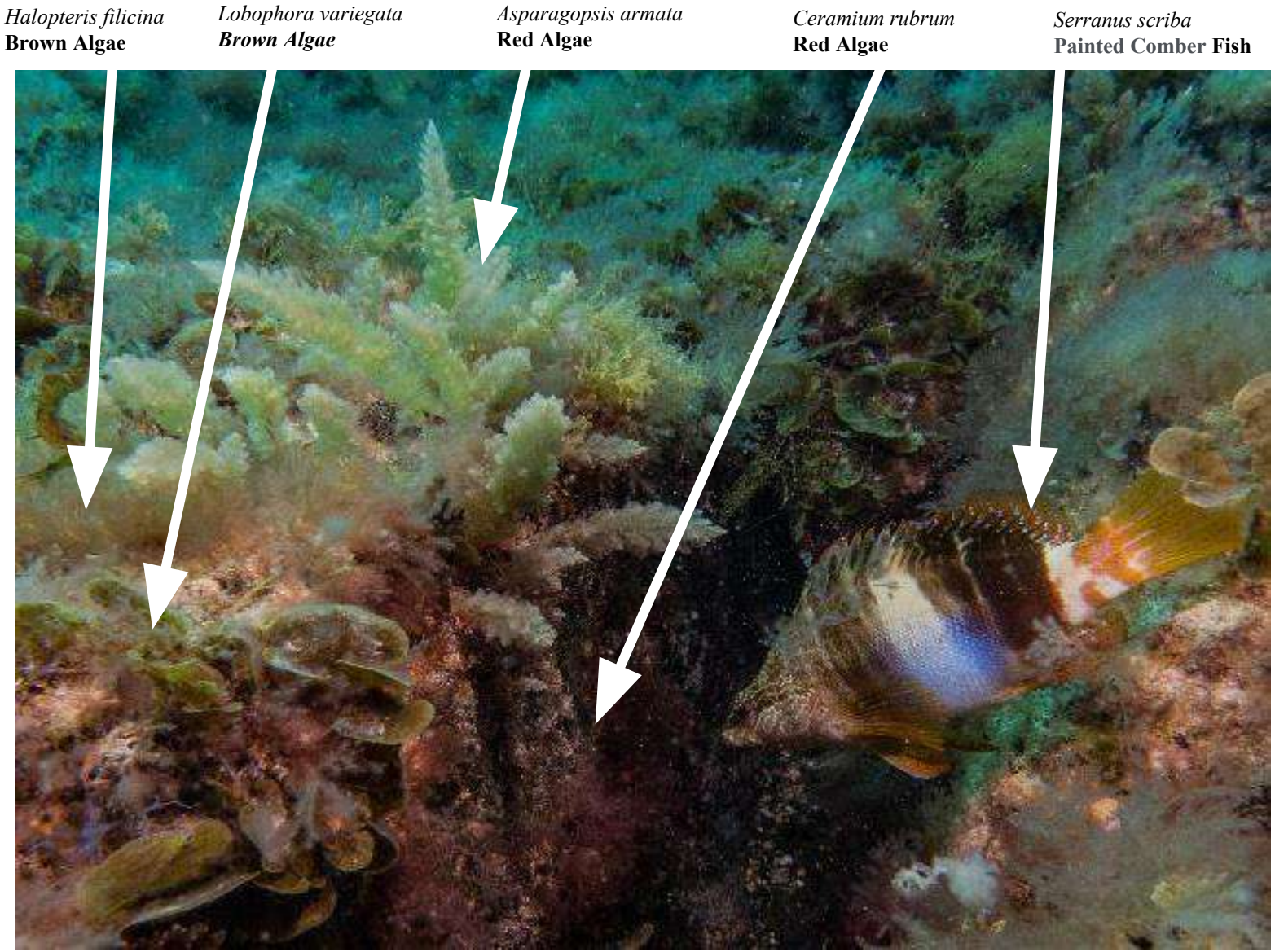
Nature Positive Cable Protection

Case Study: Marine biodiversity restoration

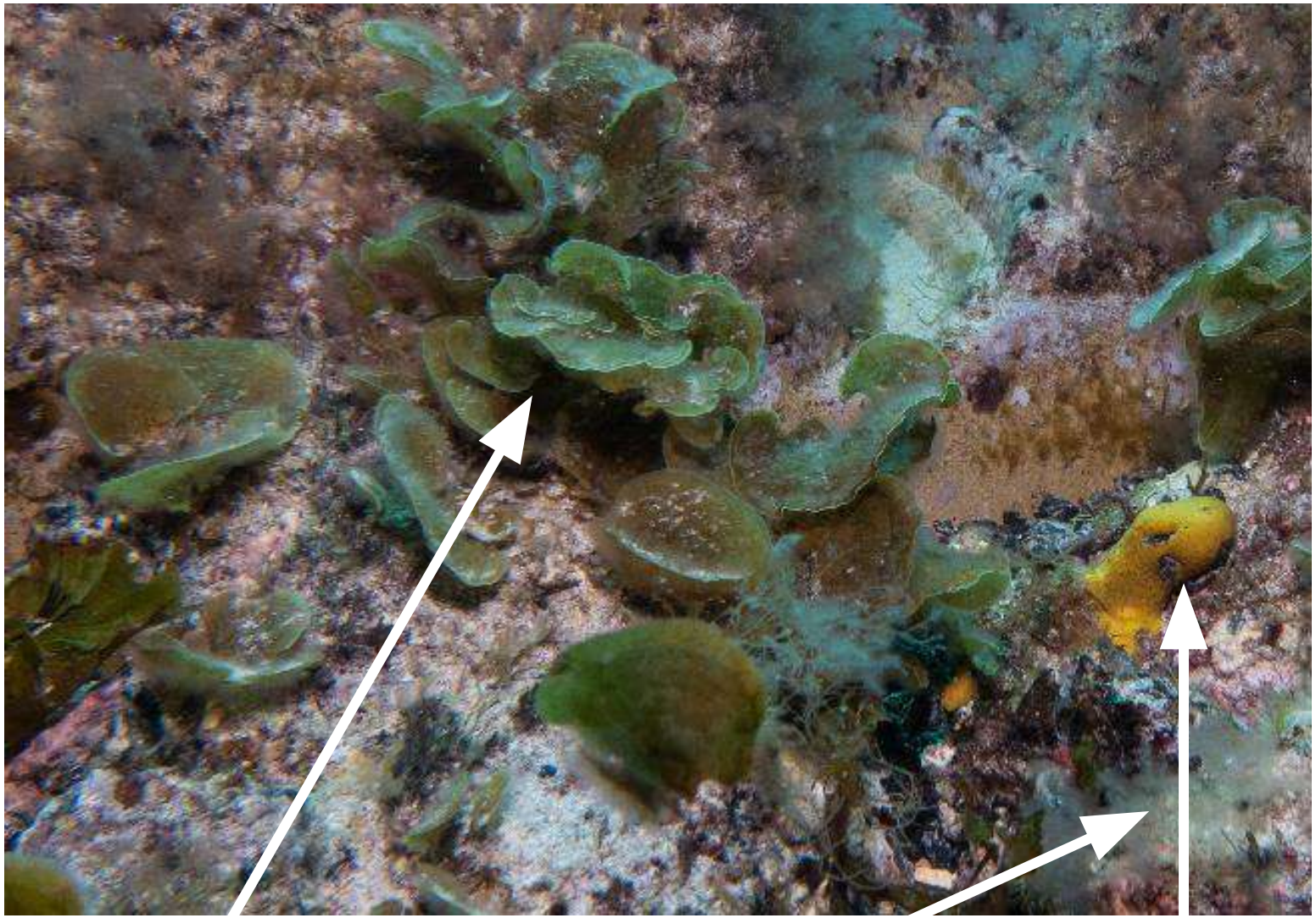
Installation (May 2022)

Monitoring 10 MPD (March 2023)



Installations provide vital shelter at vulnerable life stages:

- Growth
- Reproduction
- Feeding



Lobophora variegata
Brown Algae

Halopteris filicina
Brown Algae

Pseudosuberites sulphureus
Sponge

Sea sponges provide the following Ecosystem services:

- Water filtration

Halopteris filicina
Brown Algae

Lobophora variegata
Brown Algae

Percnon gibbes
Crab

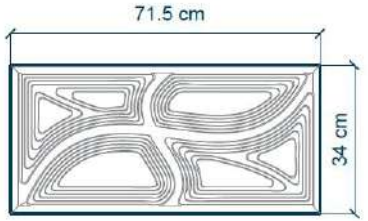
Targeted local species provide the following Ecosystem services:

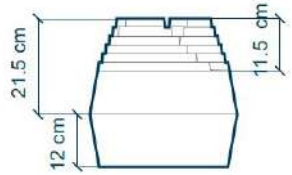
- CO_2 Absorption
- Habitat Formation
- Nutrition for sea life

Ecological Marine Mattress

Subsea assets armoring and scour protection

Wet Cast solution with dimensions that can be **tailored to fit project needs**





- Prevents sedimentation
- Fosters biodiversity
- Tapered design for overtrawlability

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Ecological Marine Mattress

Subsea assets armoring and scour protection

2D Physical Model Tests

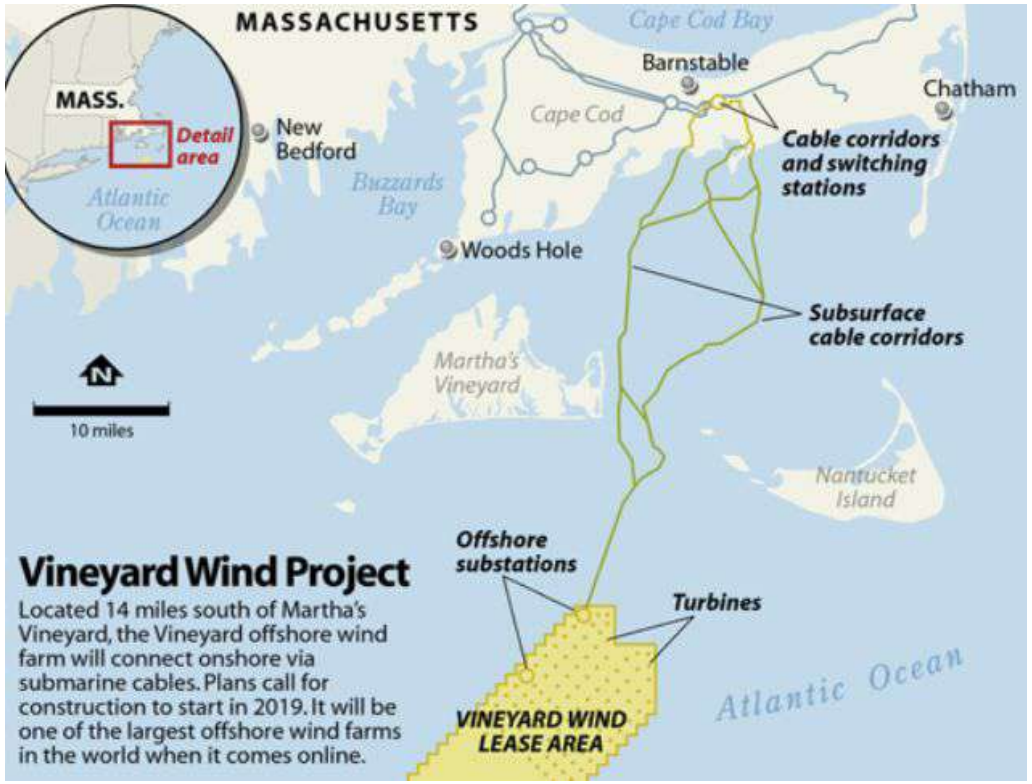
Will provide information regarding:

- Hydraulic stability limits
- Specific coefficients to be included in engineering specifications

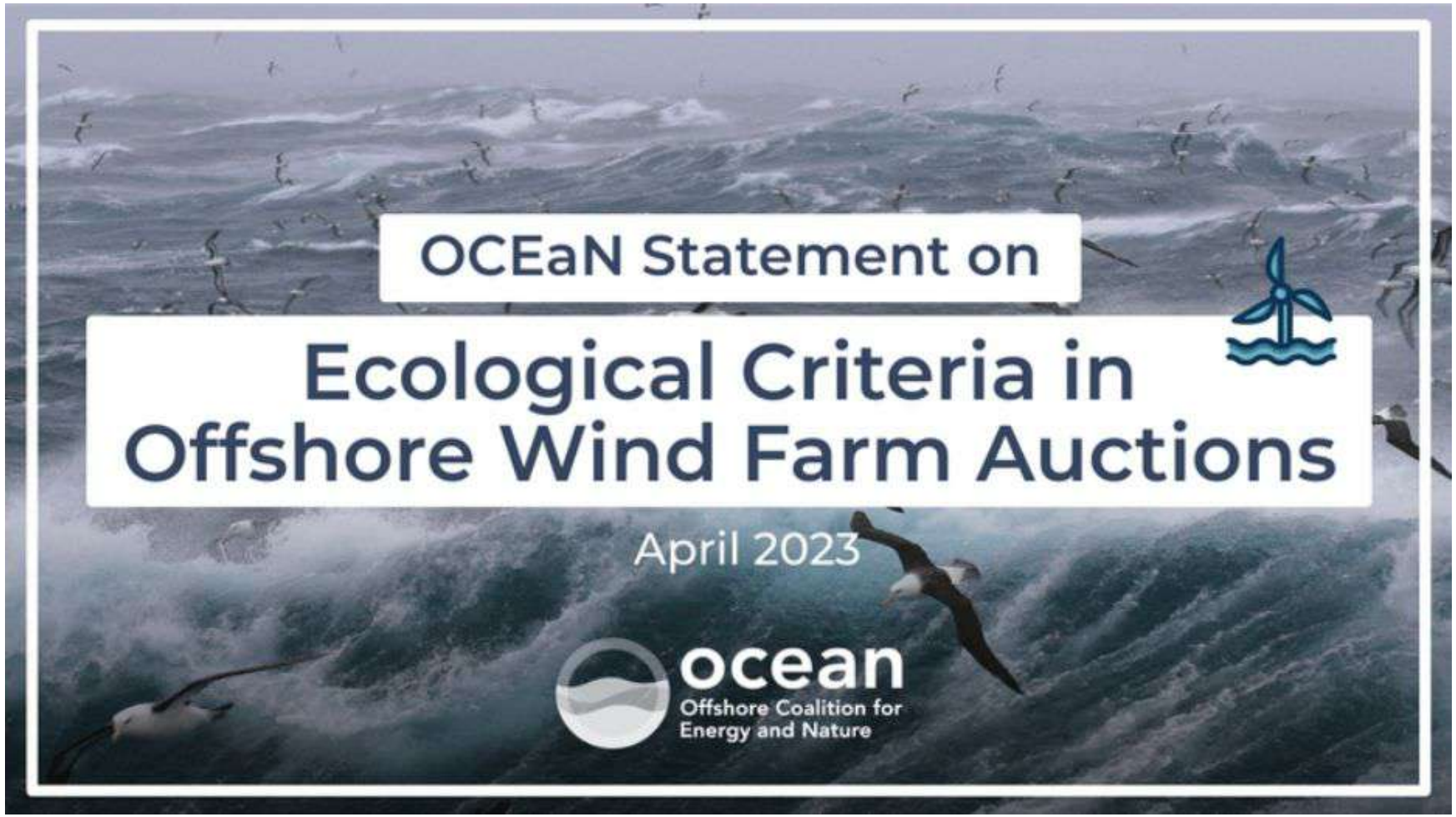
Ecological Marine Mattress

Case Study: Subsea Cable Protection

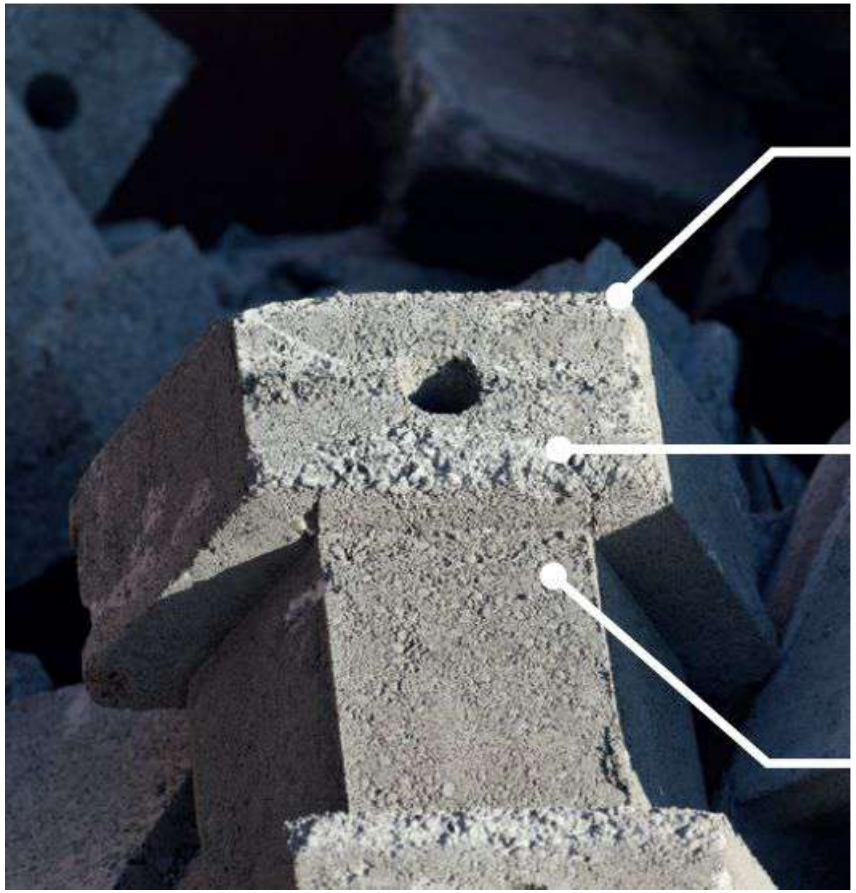
2023 Vineyard Wind, US



VINEYARD WIND


OCEaN Statement on
Ecological Criteria in Offshore Wind Farm Auctions
April 2023
ocean
Offshore Coalition for Energy and Nature

Ecological Scour Protection



Material composition
Enhance biological recruitment

High rugosity
Supports marine life settlement

Nature-Inclusive design
Facilitates growth and survival

Ecological Scour Protection

Pilot Project - Analysis of biological enhancement, production and offshore placement

Long Island, NY | 12 miles offshore

Planned 12-month biological monitoring

Over **4,000 Droplock units** and **rock-material for scour protection** were deployed in October 2022 more than 30 meters deep at a site offshore in the US.

Environmental Impact

- \+ Significantly increase biodiversity & percentage of live cover
- ↓ Significantly reduce invasive species
- \+ Recruit more inorganic biomass
- ↓ CO_2 Increases carbon sequestration
- \+ Significantly increase water quality

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