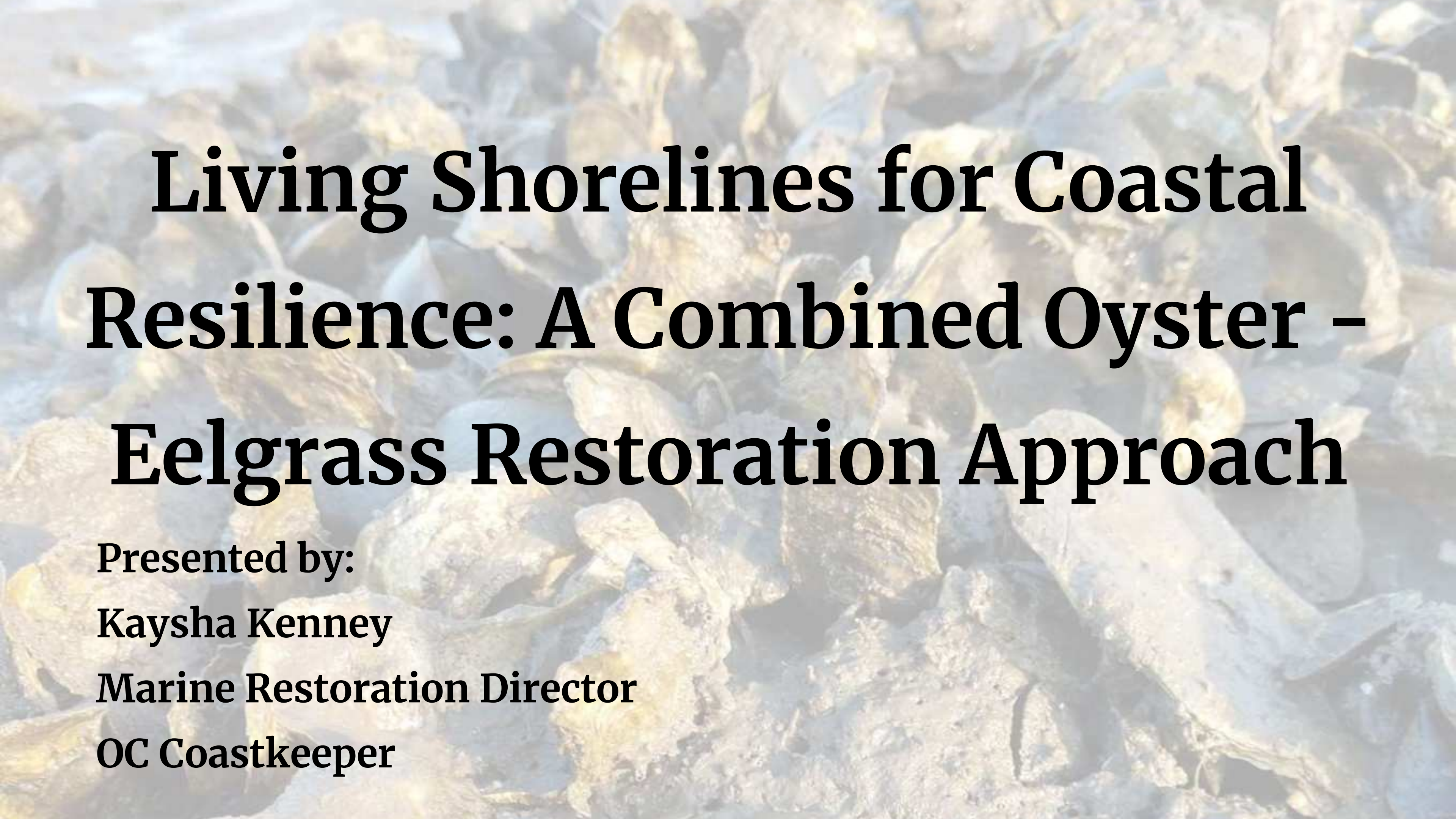


The background of the slide is a close-up photograph of a rocky shoreline. In the foreground, there are numerous light-colored, irregularly shaped rocks. Behind the rocks, there is a dense growth of eelgrass with long, thin, green blades. Interspersed among the eelgrass and rocks are many oyster shells, some of which are open, showing their dark interiors. The overall scene is a natural coastal habitat.

Living Shorelines for Coastal Resilience: A Combined Oyster – Eelgrass Restoration Approach

Presented by:

Kaysha Kenney

Marine Restoration Director

OC Coastkeeper



CALIFORNIA STATE UNIVERSITY
LONG BEACH

Cal State **Fullerton**®

Newport Bay Living Shorelines

Explored co-restoration of oysters and eelgrass using dead *M. gigas* shell as base for Olympia oyster restoration





Objective:

Explore whether integrated oyster (*Ostrea lurida*) and eelgrass (*Zostera marina*) restoration enhances or harms the performance of each species and the ecosystem services they provide compared to isolated restoration of each species



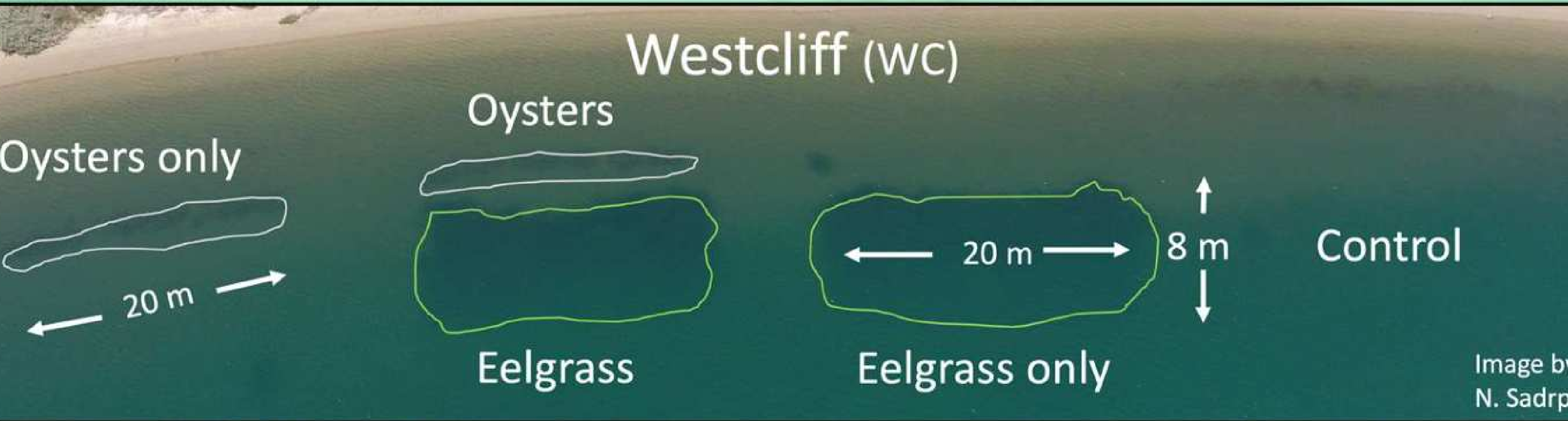
WC

SM

PCH

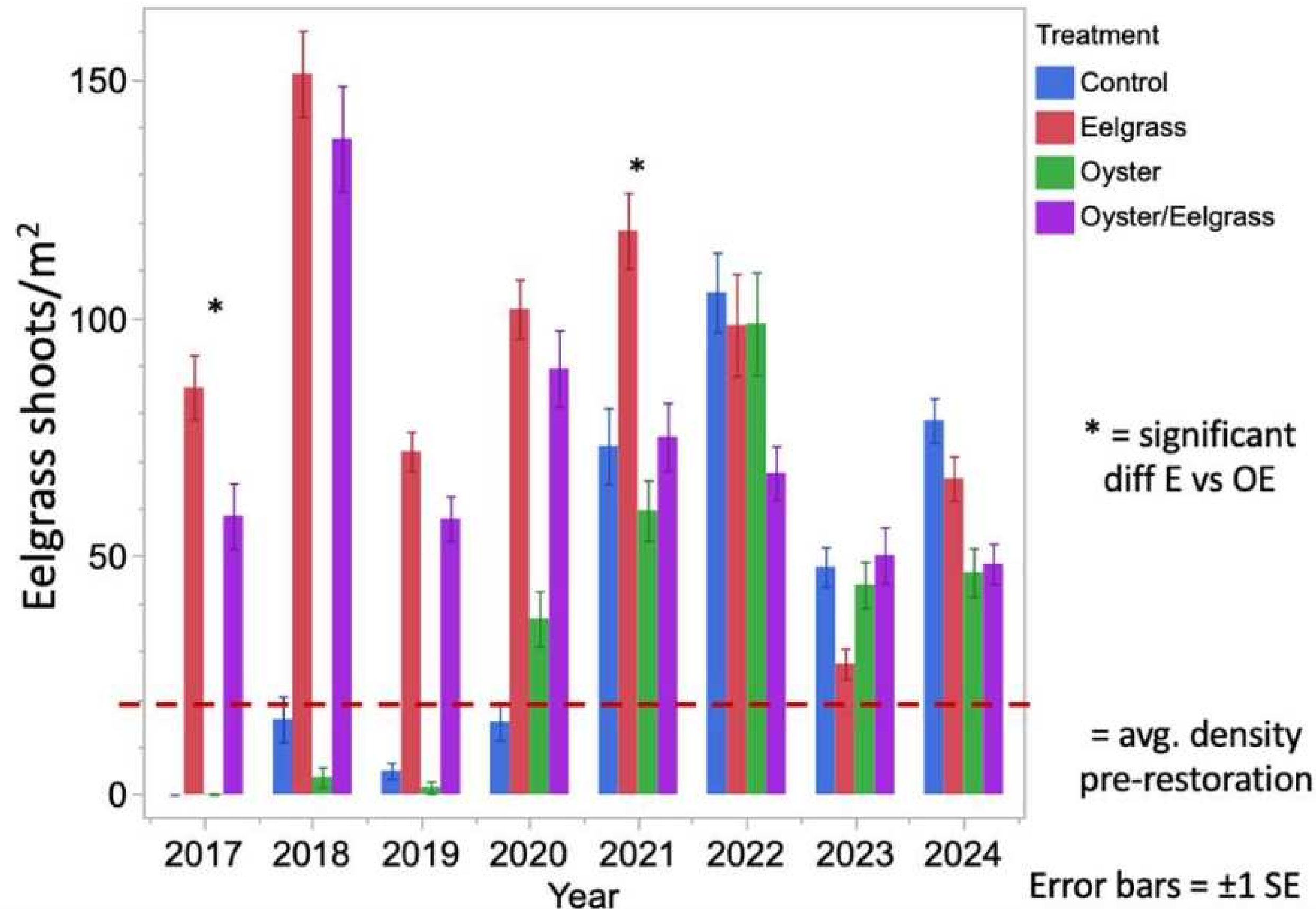
DA

Within-site Study Design

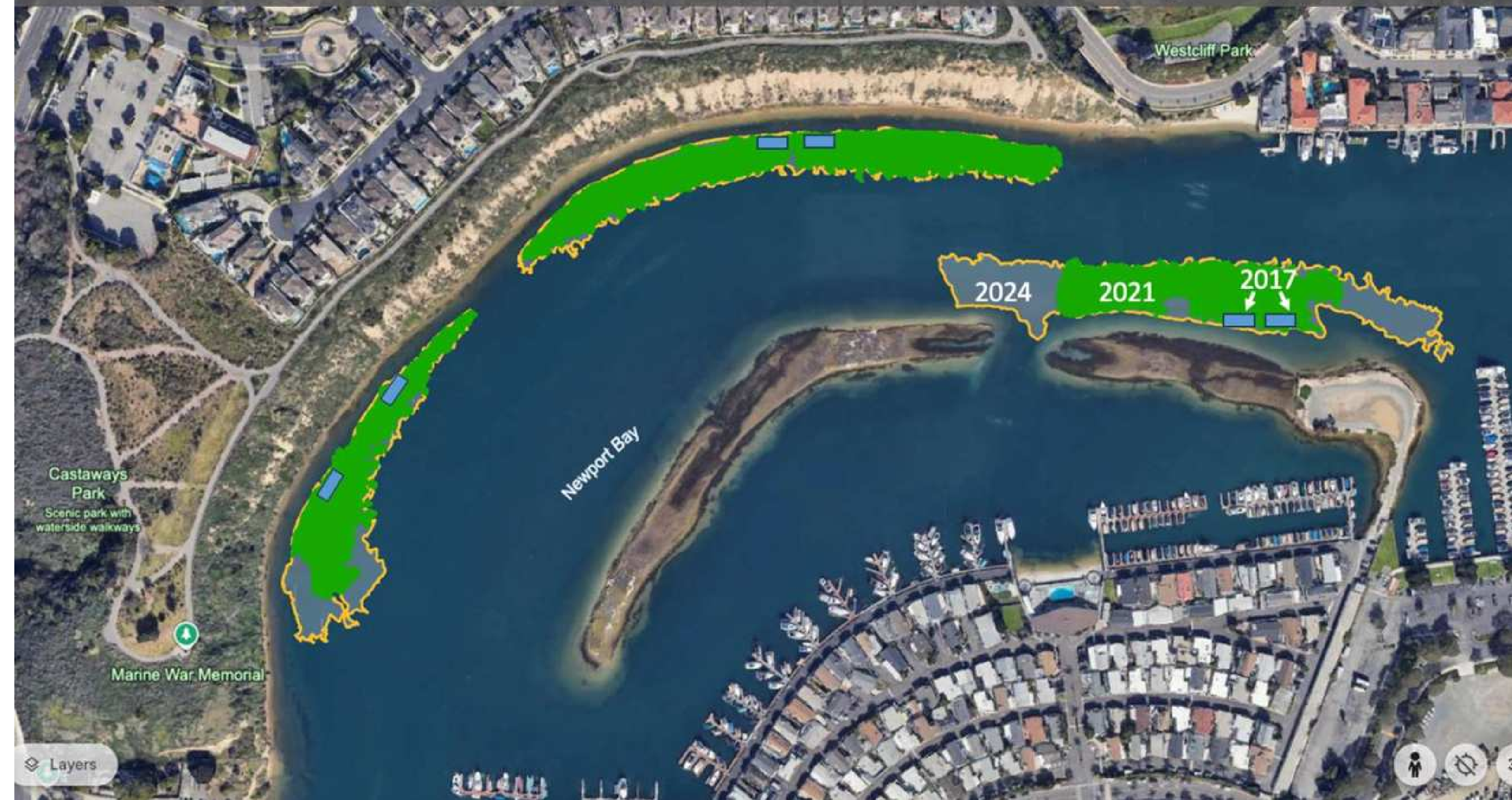


- Eelgrass beds restored in 2016 – 8 years post-restoration data
- Oyster beds restored in 2017 – 6 years post-restoration data

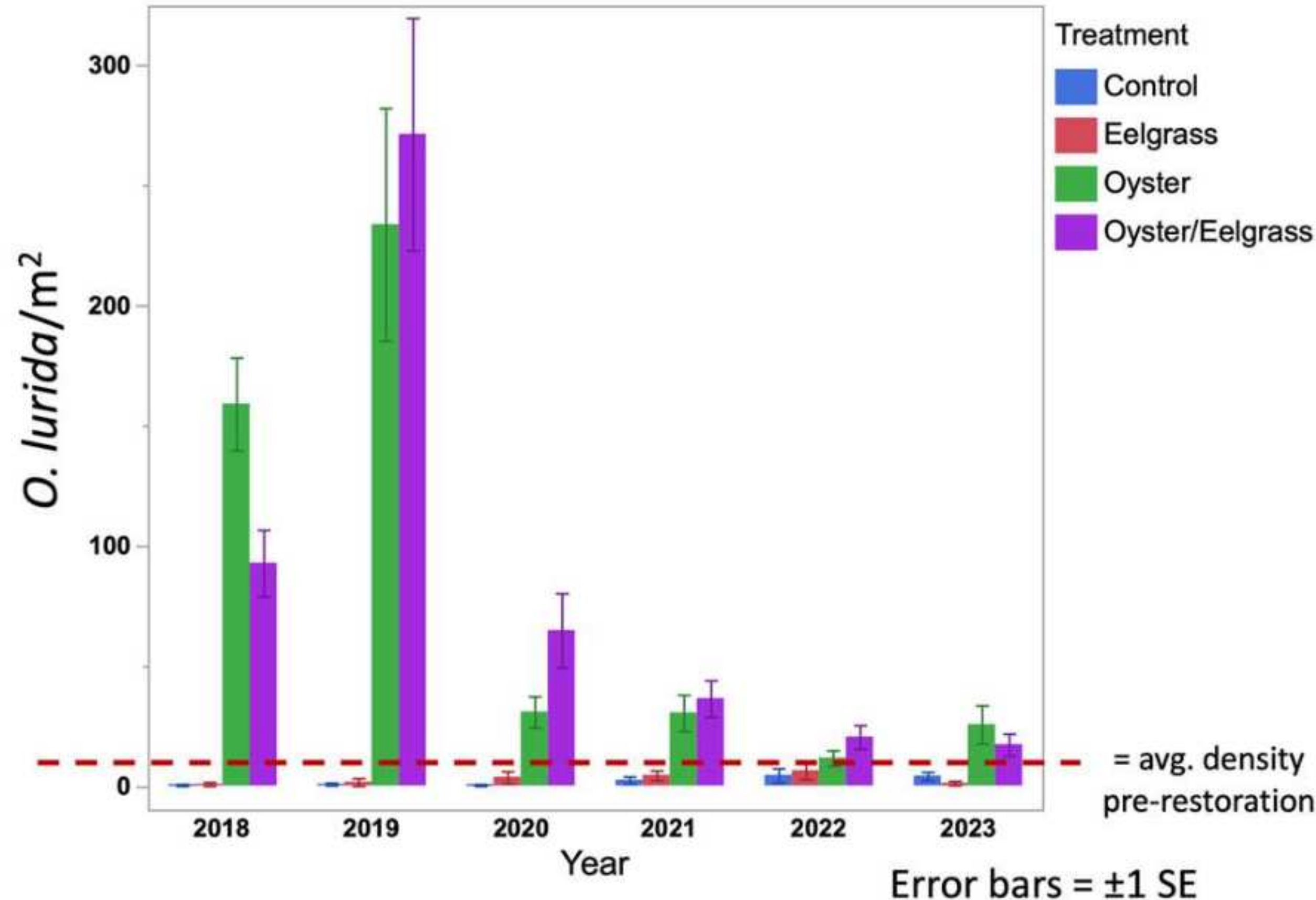
Post-restoration: eelgrass density has ranged from 3 to 8 X greater than pre-restoration densities



Eelgrass areal extent is 22 times greater than targeted (and growing)!



Post-restoration oyster density up to 25 X greater than pre-restoration; declined substantially in 2020 – 2 X greater in 2023



Bed integrity and shell cover declined across sites and shell migrated shoreward...



...except Shellmaker



Dec 2020

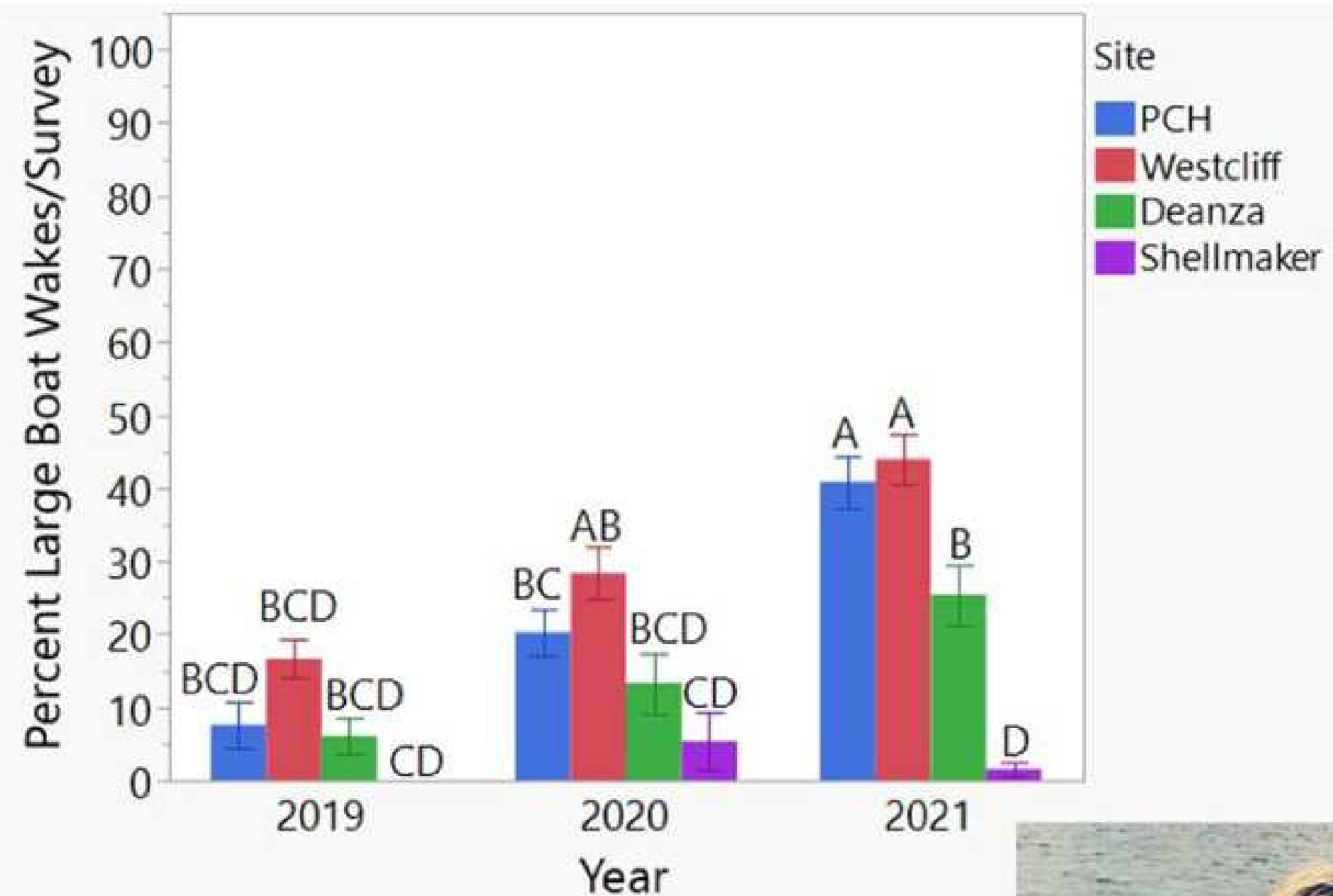
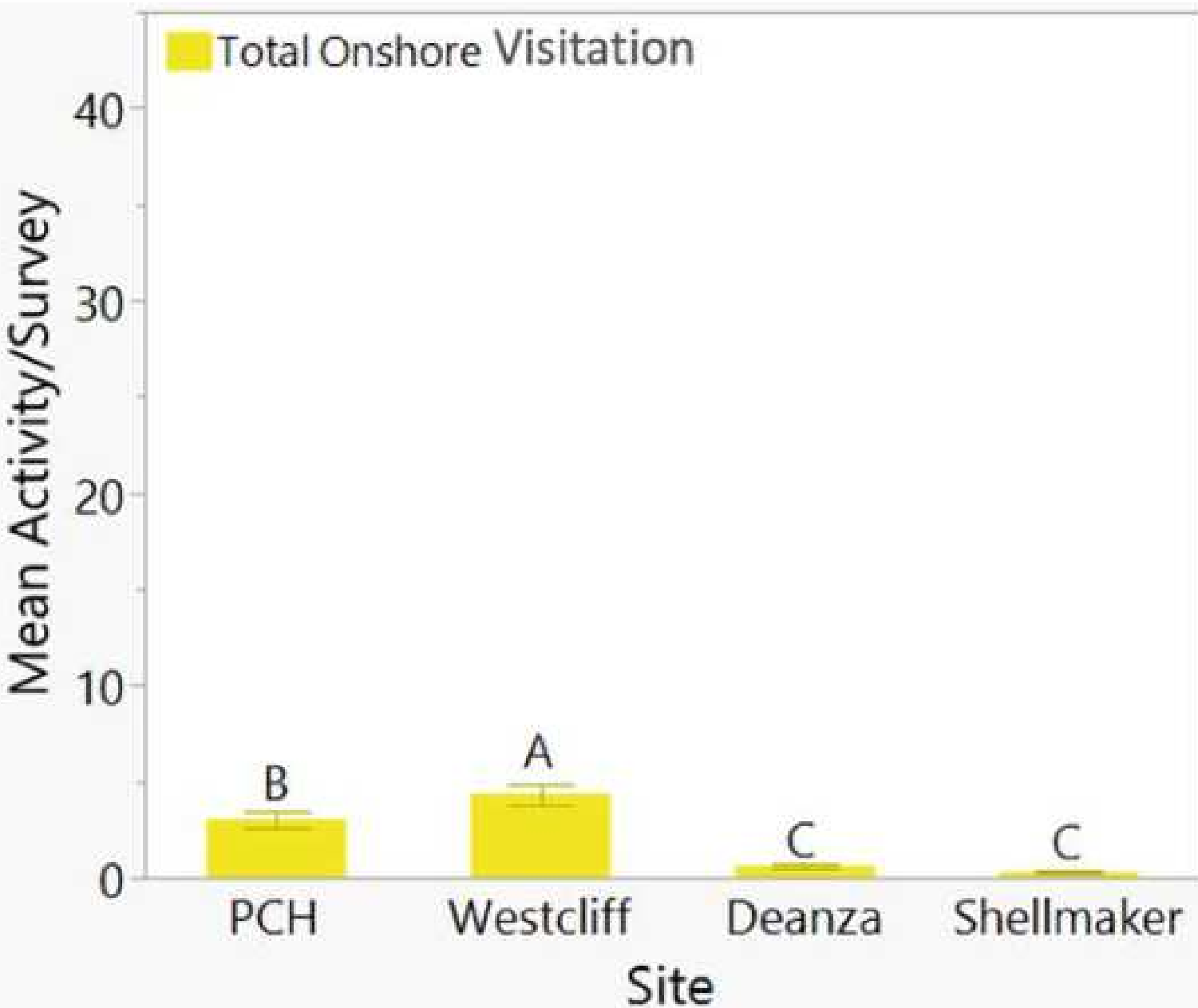


May 2022



April 2025

Sites with lowest bed integrity (PCH and Westcliff) had highest visitation and larger boat wakes



Valerie Goodwin



Take-homes from Living Shorelines Study

- Overall good success with restoring target species in terms of density, abundance and areal extent but oyster beds degrade over time
- Remarkable site-to-site differences in bed integrity and target species densities, likely due to trampling and boat wake impacts – location is everything!
- Future oyster restoration planning should incorporate “maintenance costs”



Current and Future Work



The background of the slide is a close-up photograph of numerous oyster shells scattered on a sandy beach. The shells are in various orientations, showing their characteristic ridged and pitted textures. The colors range from a pale, almost white, to a deep, dark grey or black, with some showing signs of weathering and discoloration. The lighting is bright, creating strong highlights and shadows that emphasize the rough surfaces of the shells.

THANK YOU!

Questions?

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