OYSTERMENS WORKSHOP

APALACHICOLA ESTUARINE RESEARCH RESERVE

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Restoration Experiments

Test different materials and designs for restoration efficacy






Restoration

Apply results of restoration trials to developing full-scale restoration plan for the ABSI region.

Image UF/IFAS

Material options

- Granite – heavy, not easily moved, doesn't dissolve, various sizes
- Limestone rock – heavy, may degrade, various sizes, same chemistry as shells
- Fossilized shell – may crumble, releases sediment, may be moved, and degrades. Variable quality
- Natural shell – very light, easily moved, may not be available, may degrade

Calcium Carbonate $CaCO_3$

Limerock = Calcium carbonate

Oyster shell = Calcium carbonate

Coral reefs = Calcium carbonate

Fossil shell = Calcium carbonate

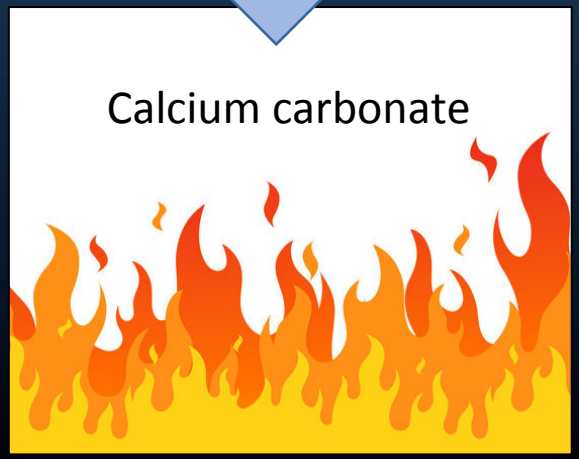
Limerock = Calcium carbonate

Oyster shell = Calcium carbonate

Limerock = Calcium carbonate

Oyster shell = Calcium carbonate

Calcium carbonate

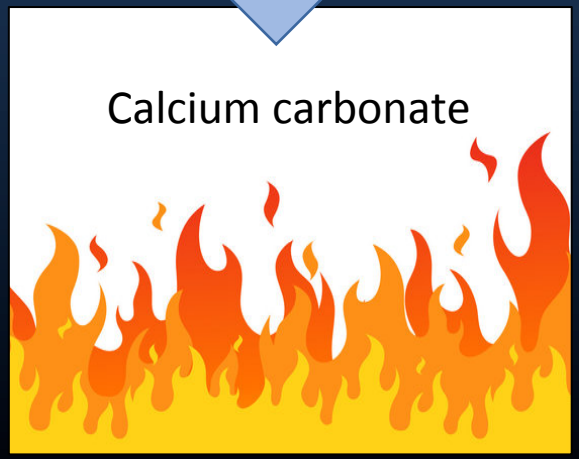


Quicklime = Calcium oxide

Limerock = Calcium carbonate

Oyster shell = Calcium carbonate

Calcium carbonate



Quicklime = Calcium oxide

Reef height

Most restoration experiments put a thin layer (1-3 inches) over a large area

This leaves the oysters vulnerable to burial, suffocation or low oxygen

A higher reef gets the oysters out of the mud and into clean water

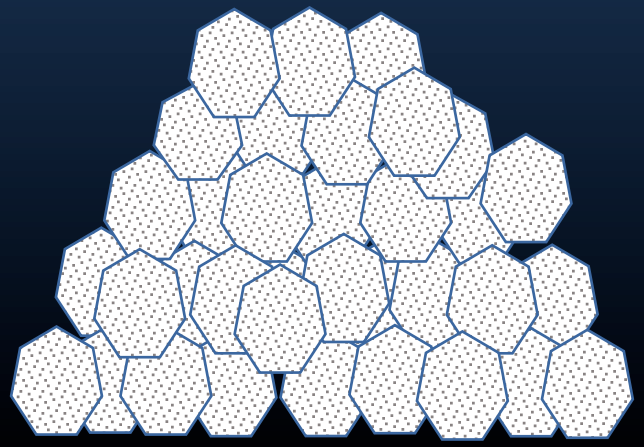
Methods

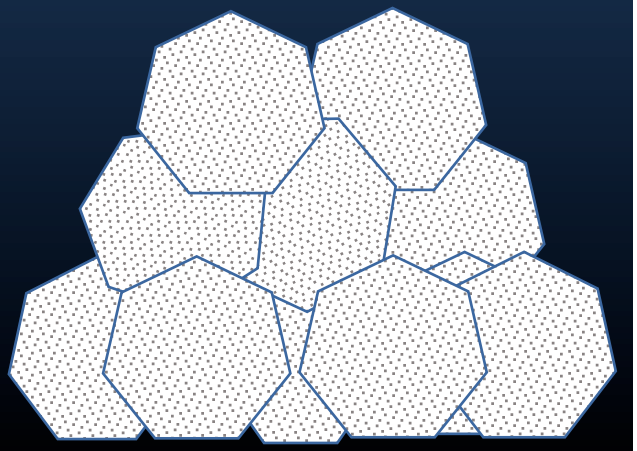
Reef design

30 ft x 30 ft x 1.5 ft = 50 cubic yards of material

Materials

- Natural oyster shell – good for spat settlement, can be harvested with tongs
- Small Limerock (2”) creates mound, small spaces, many layers, can be harvested with tongs
- Medium Limerock (6-8”) – creates stable structure, medium spaces, few layers, good for habitat development, can be harvested once oysters develop.

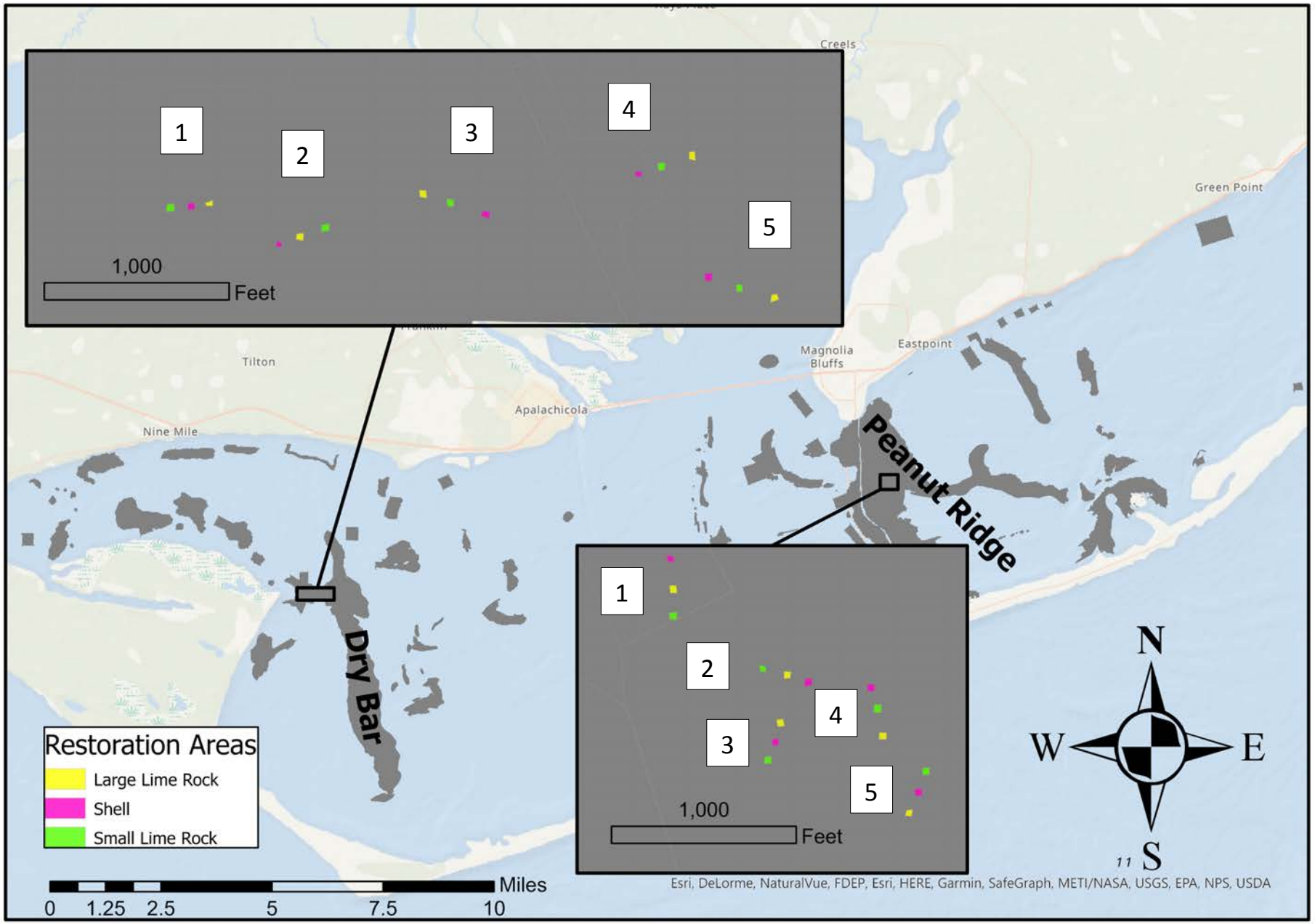




Deployment

26 May – Peanut Ridge Shell
27 May – Peanut Ridge Small Limerock
3 June – Dry Bar Small Limerock
4 June – Dry Bar Shell
9 and 29 June – Dry Bar Large Limerock
24 June– Peanut Ridge Large Limerock

ABSI Experimental Oyster Restoration Sites



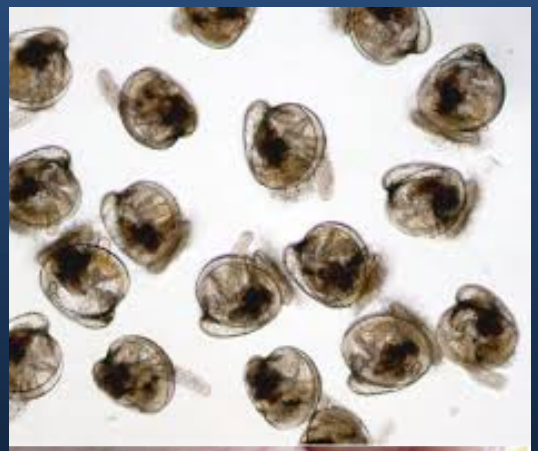
ABSI HATCHERY

First successful spawn May 7th

Deployed June 15th (20 days post-set)

Spawned again June 8th (3.5 million larvae)

Deployed July 14th (22 days post set)



Spat deployment

Assess spat survival and growth

Vexar cages (14” x 36” x 4”)

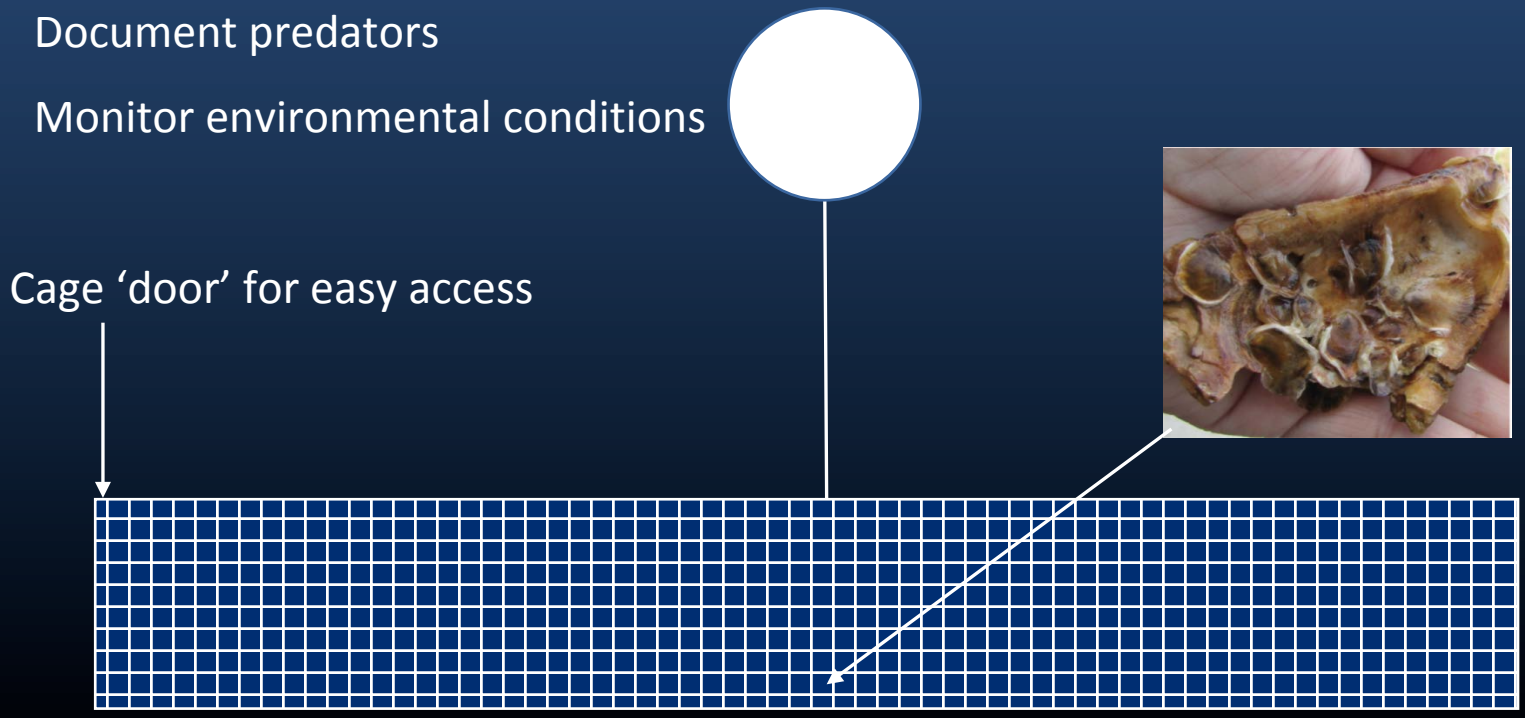
Spat cages (one per reef): 150 spat on shell per cage (~ 50 shells)

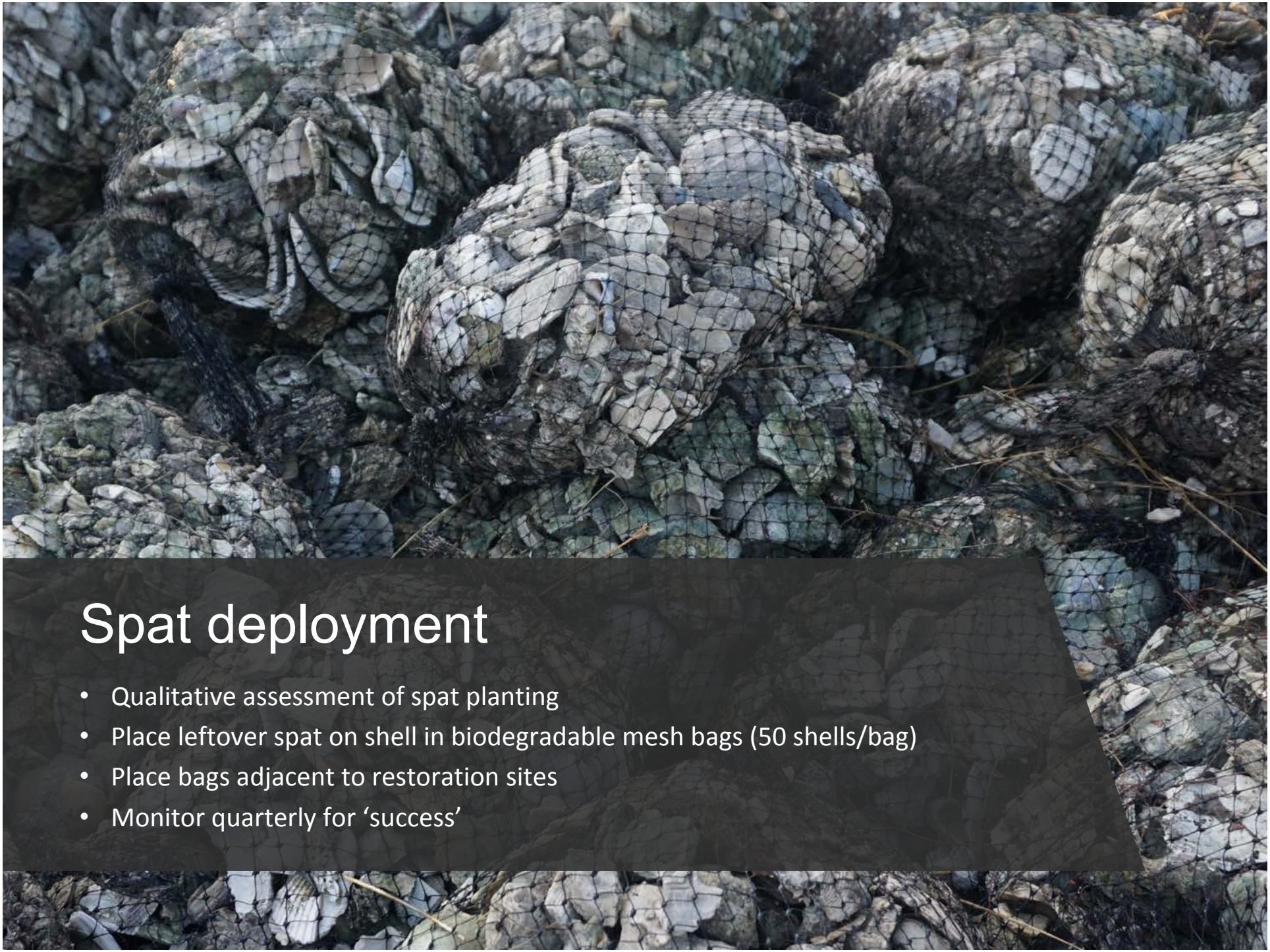
Bare shell (one per reef): 50 clean shells per cage to account for wild recruitment

Monthly/quarterly (tbd): subsample cages and document survival and growth

Document predators

Monitor environmental conditions

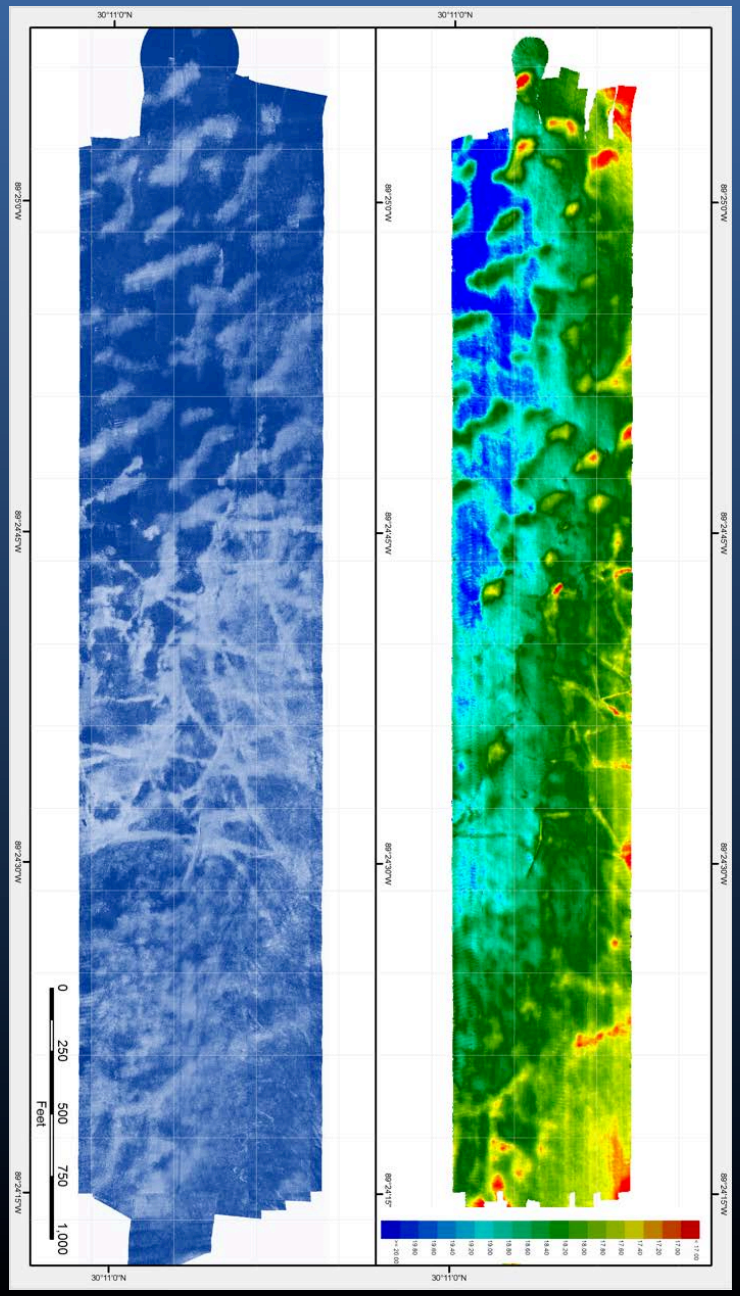




Spat deployment

- Qualitative assessment of spat planting
- Place leftover spat on shell in biodegradable mesh bags (50 shells/bag)
- Place bags adjacent to restoration sites
- Monitor quarterly for ‘success’

3D mapping

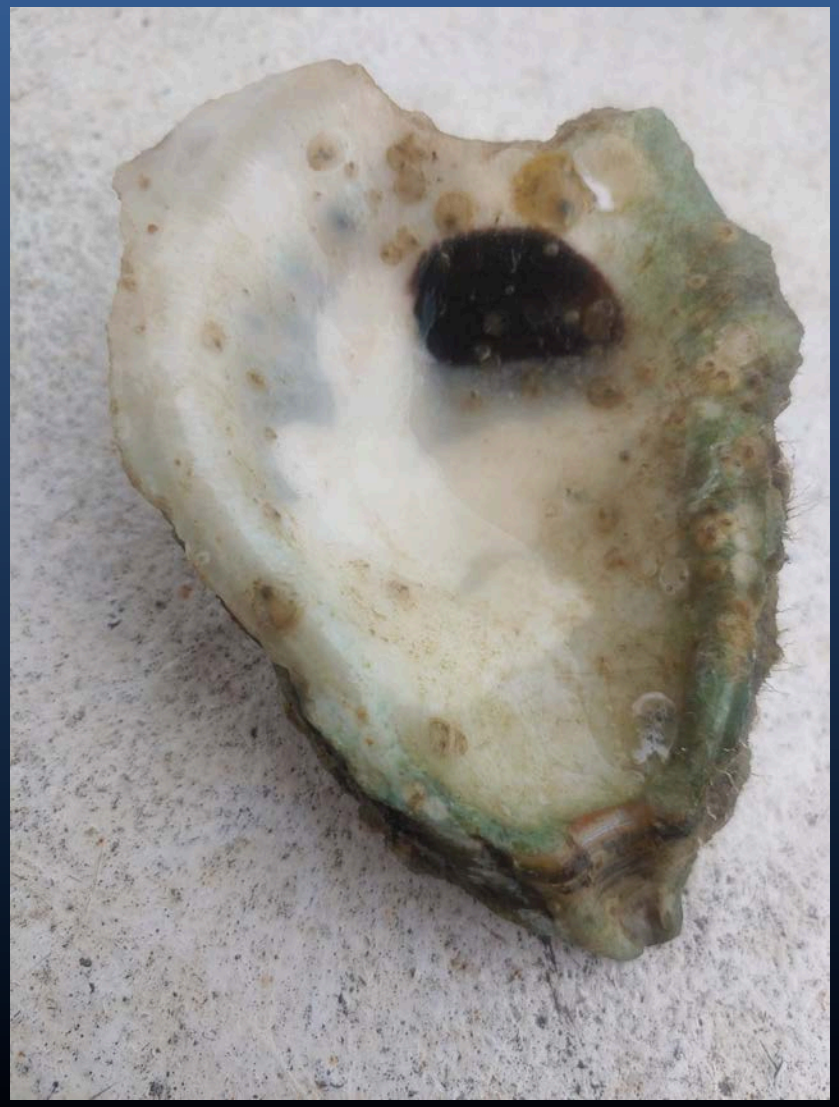


Reefs are being mapped

National Oceans and Applications Research Center (NOARC)

Shells from experiments on Peanut Ridge and Dry Bar June 23rd

We have spat!!! ☺




Questions?
Lynne Buchanan