



Not losing the forest for the trees:

Integrating grazers into Mote's holistic coral reef restoration strategy

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Coral Reef Restoration Research Program
Mote Marine Laboratory





Photo: Steve Spring

How do we reverse the

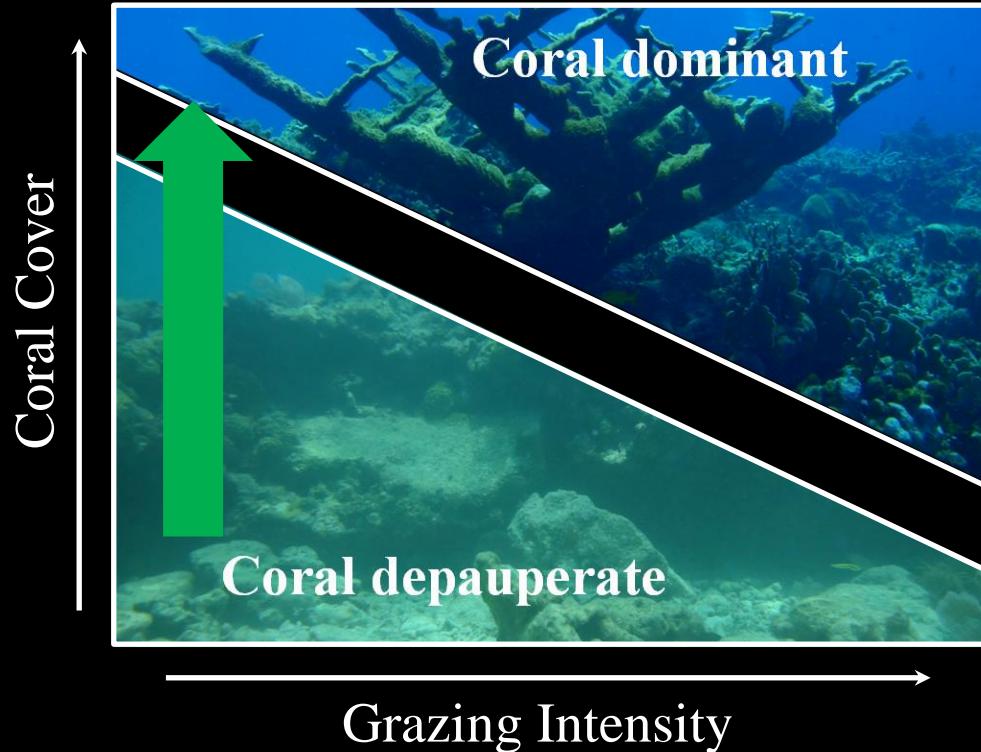


Photo: Science Magazine



Photo: Steve Spring

phase shift?

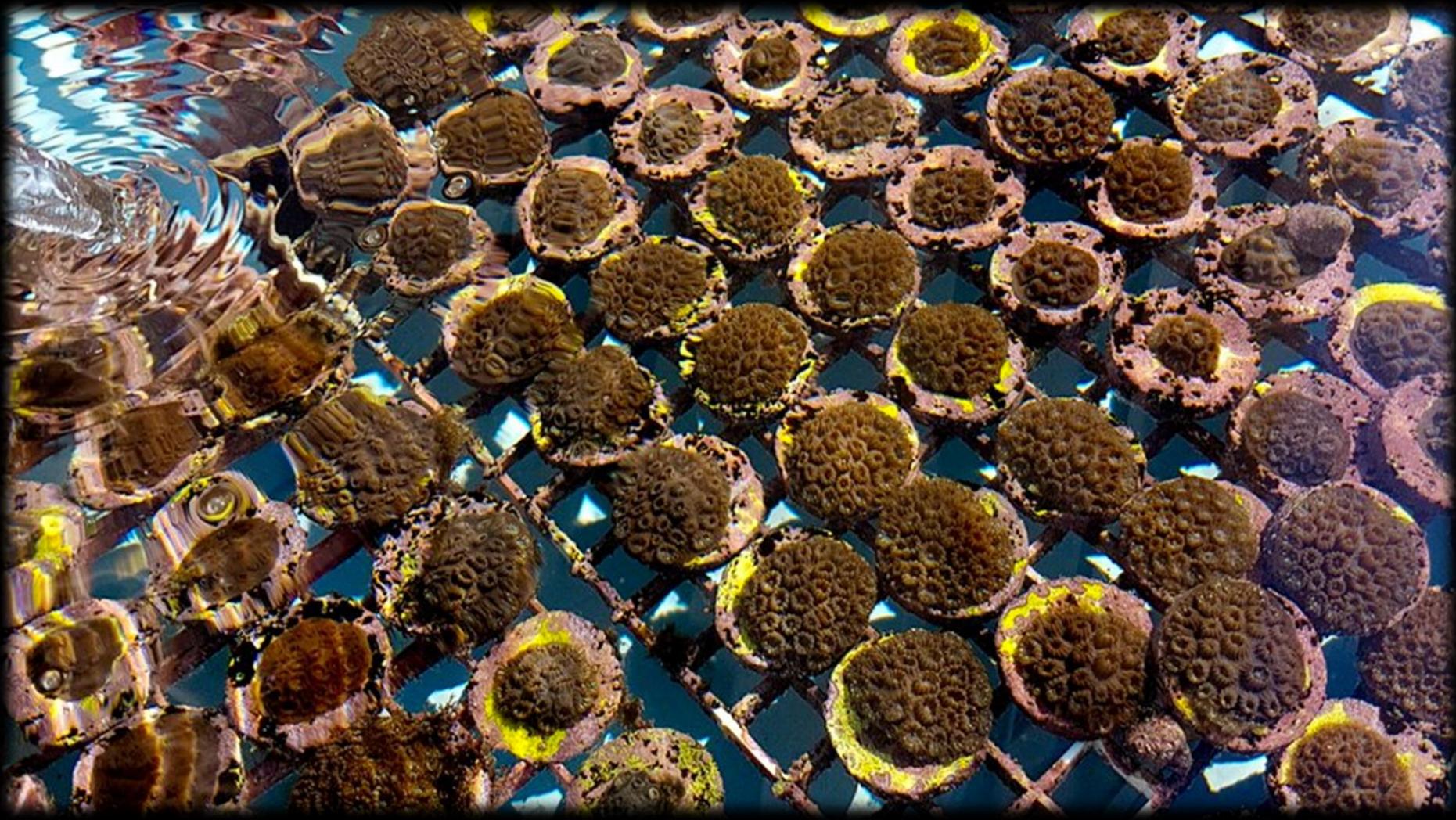


Adapted from Mumby (2007)



Sarah Hamlyn









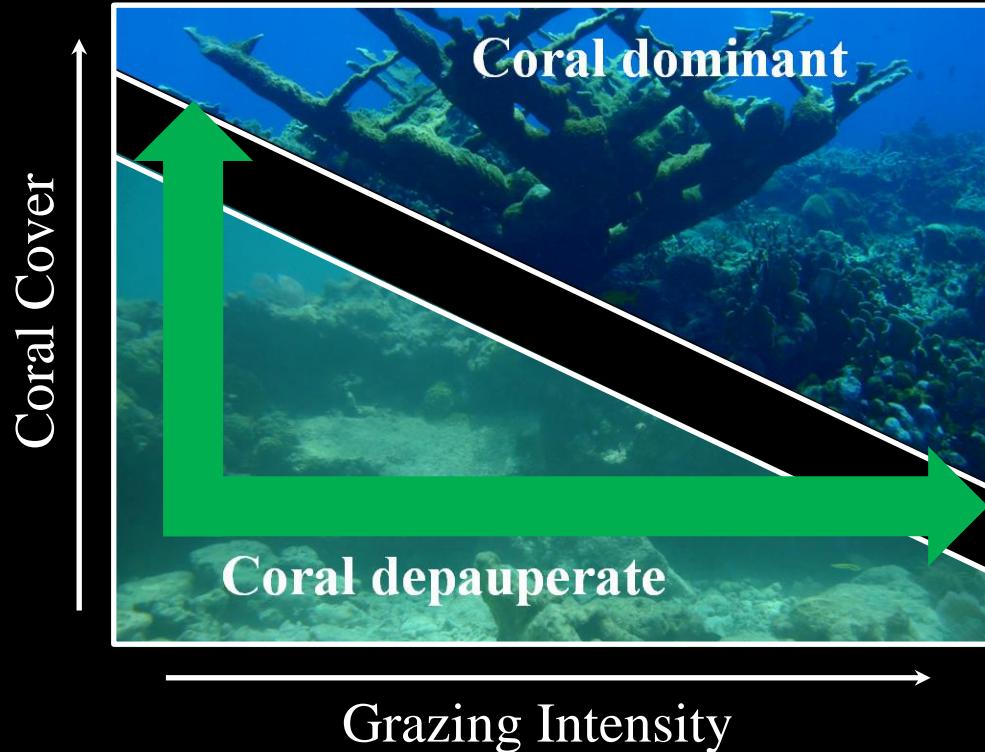
Fragments of Hope



The Scientist



Photo: Steve Spring



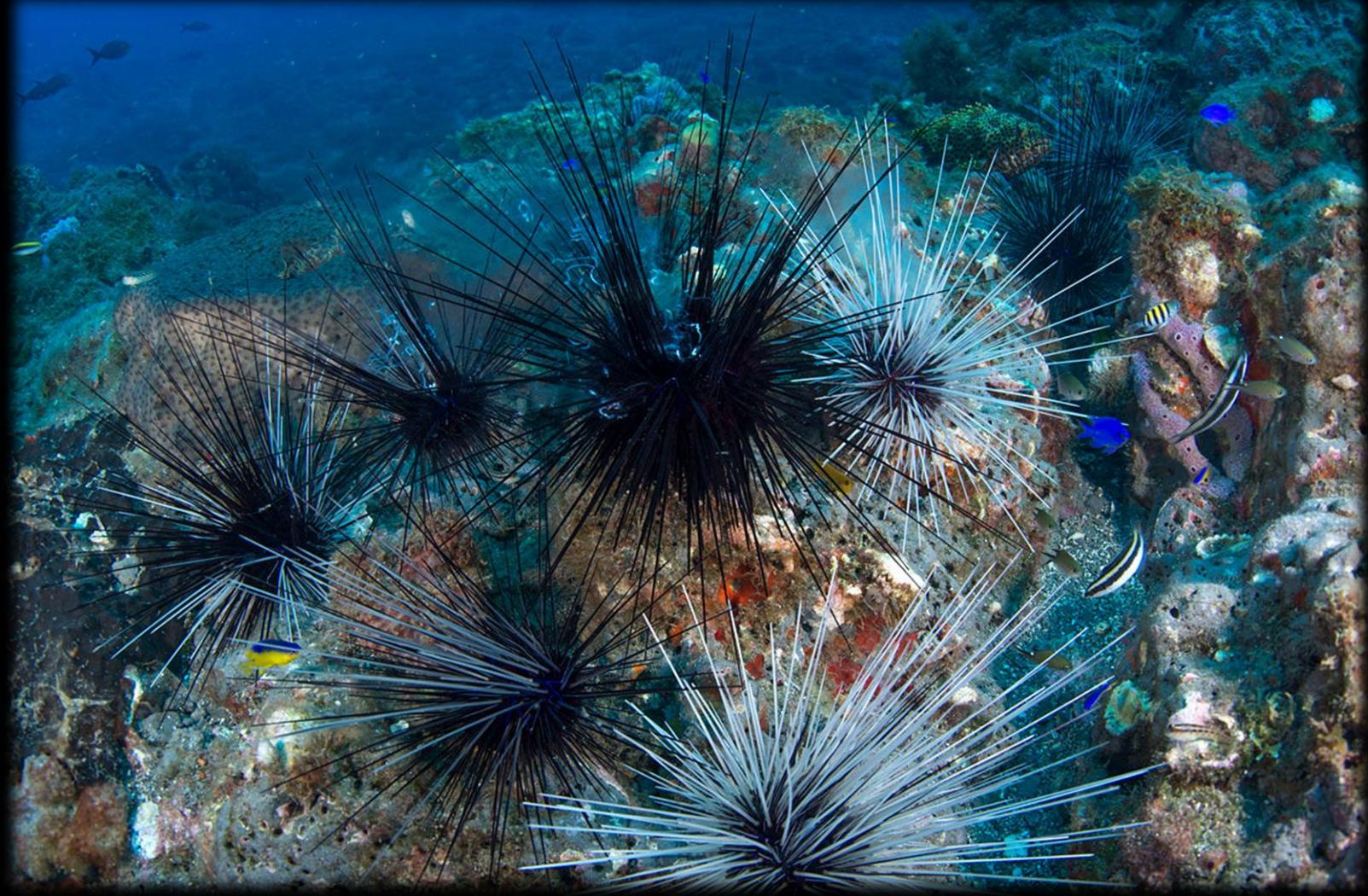
Adapted from Mumby (2007)



Photo: Hawaii.gov



Photo: royalgazette.com



Diversity

&

Resilience

Enter...
crabs?



The Caribbean King Crab

Channel Clinging Crab

West Indian Spider Crab

Photo: A. Baeza



Lamarck, 1818

Mithrax spinosissimus

Windsor and Felder, 2014

Damithrax spinosissimus

Klompmaker, et al., 2015

Maguimithrax spinosissimus

Photo Credit: A. Baeza



Images: Sony Picture Studios



Mar Biol (2012) 159:2697–2706
DOI 10.1007/s00227-012-2027-1

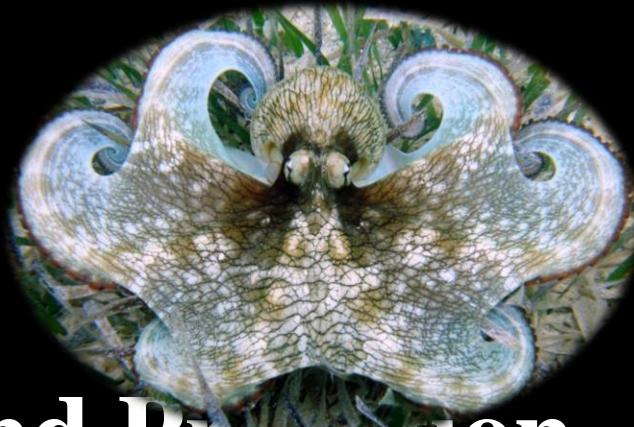
ORIGINAL PAPER

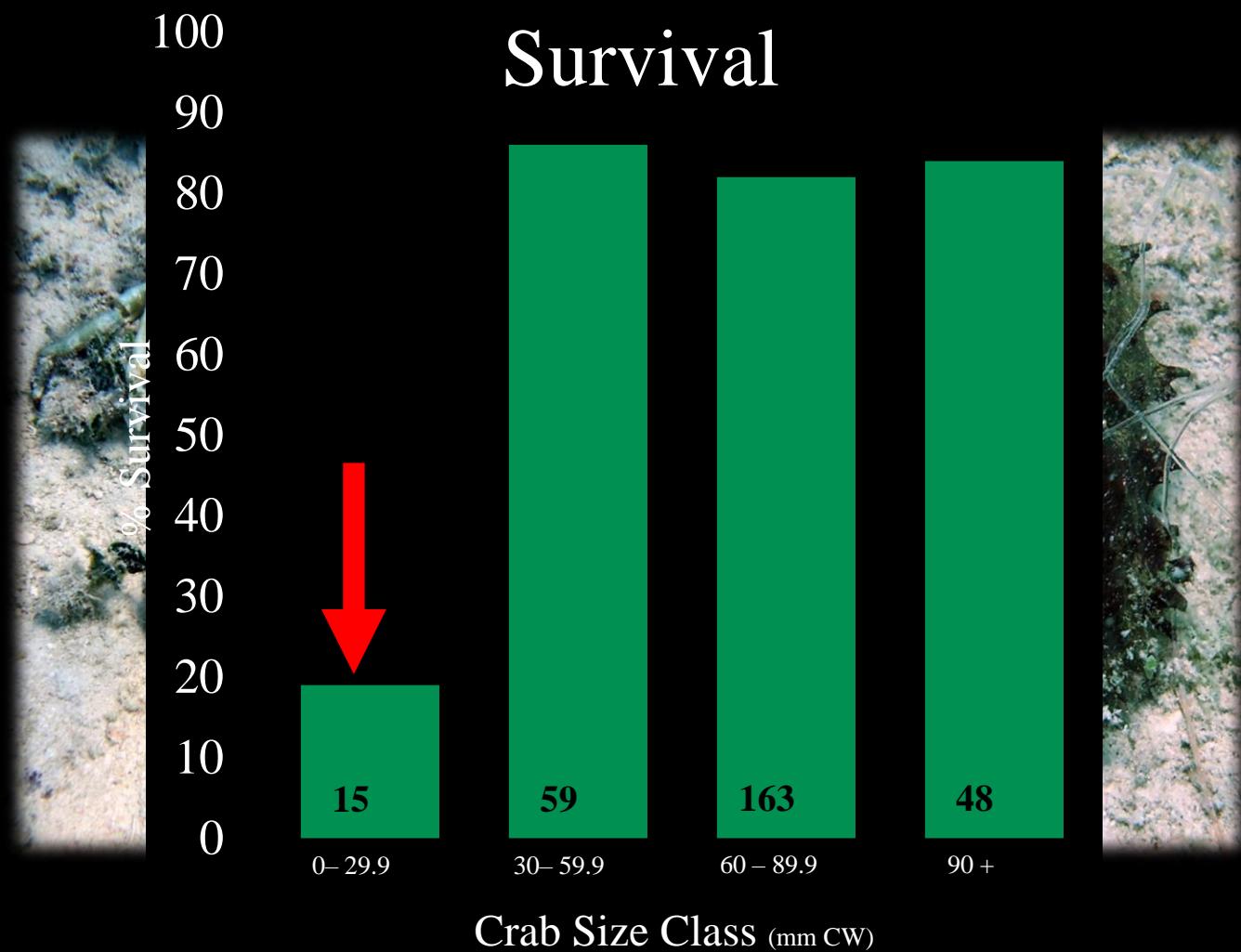
Herbivory by the Caribbean king crab on coral patch reefs

Mark J. Butler IV · Angela M. Mojica

Natural Density < 0.001 crabs / m²

Mortality and Preuation





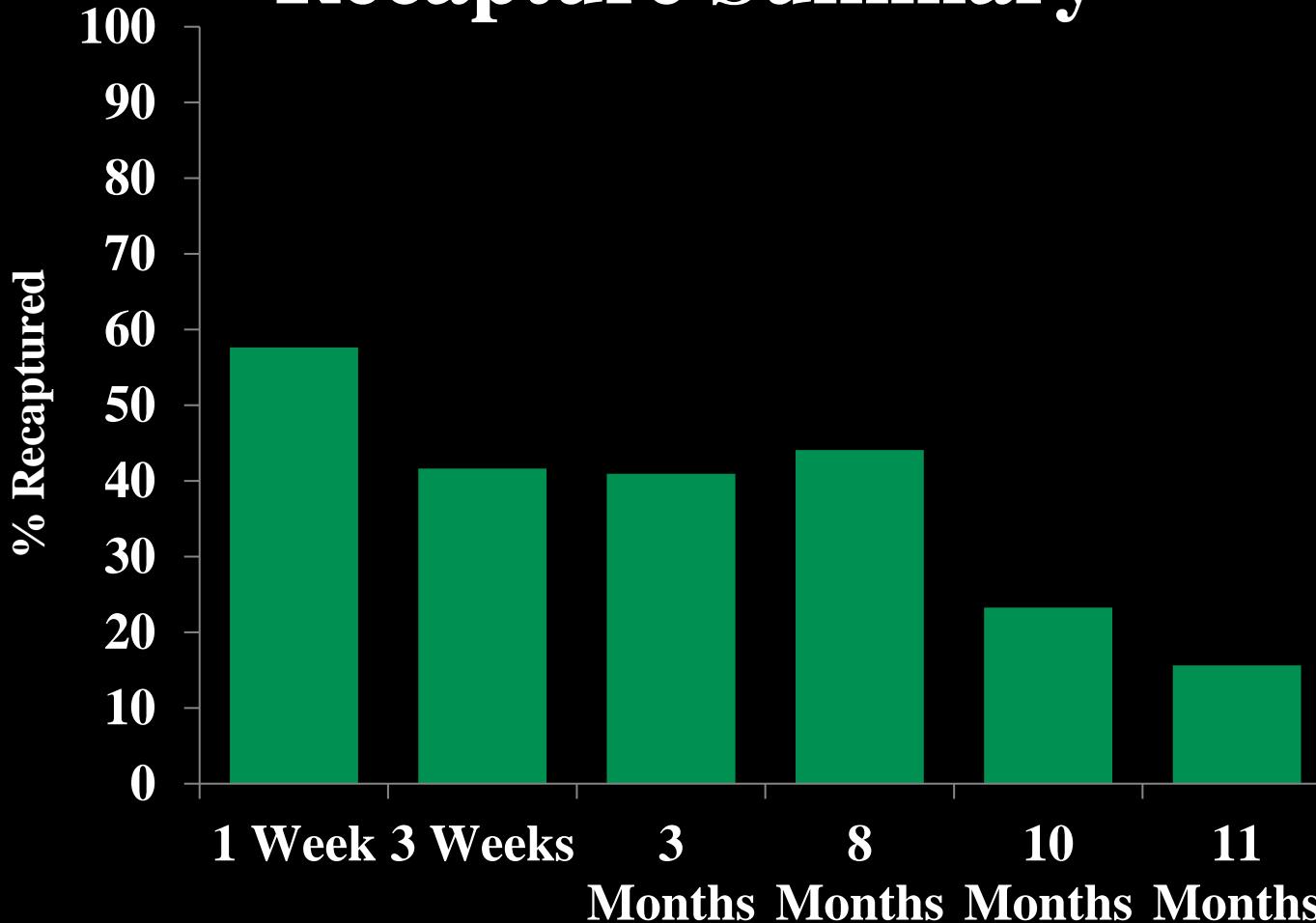
A photograph showing a group of approximately ten small, bright orange-red crabs clustered together on a light-colored, textured rock or coral surface. The crabs are positioned at various heights, some appearing to be on top of others. They have prominent yellowish-orange claws and are surrounded by greenish-blue marine plants.

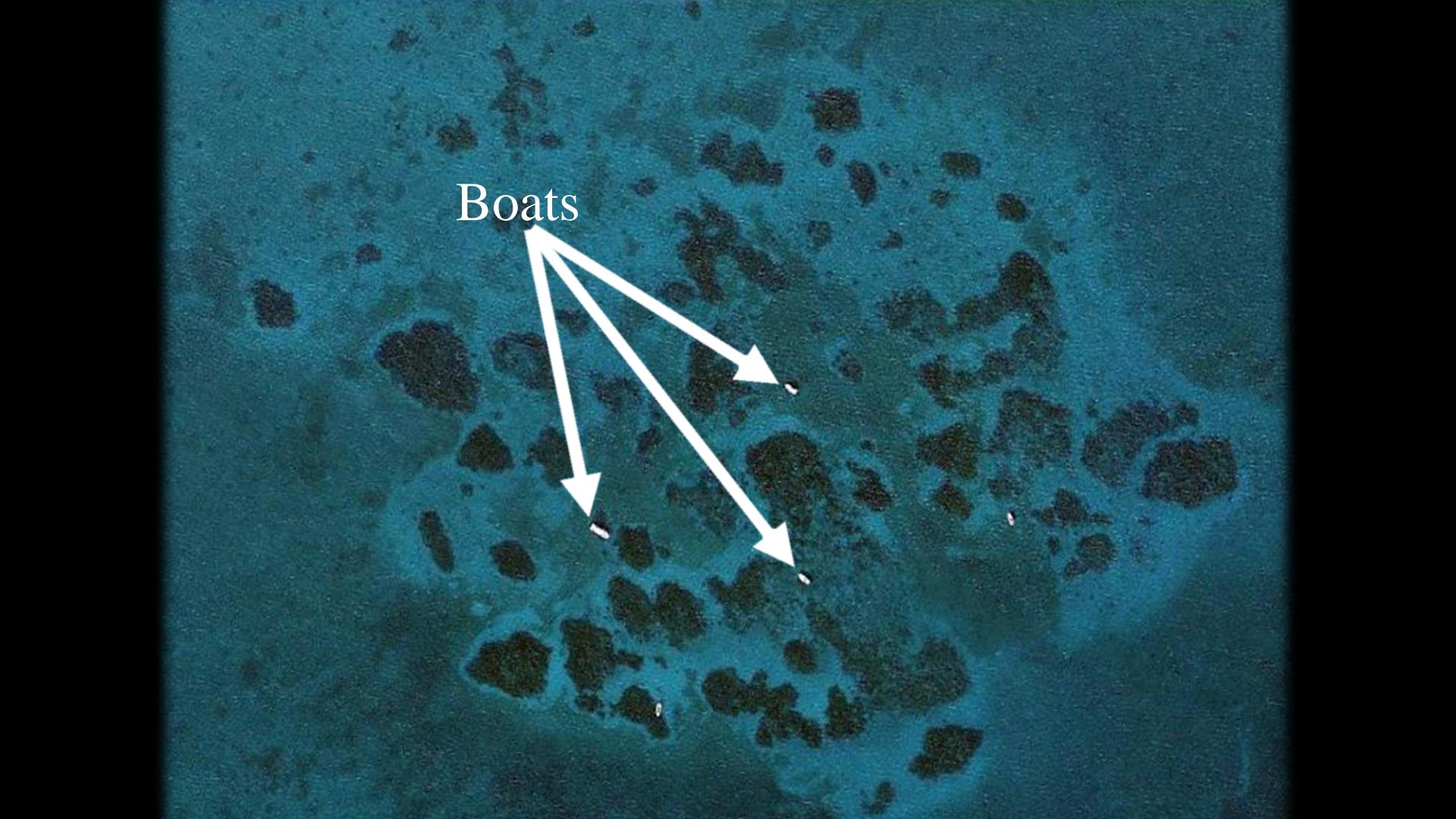
Site Fidelity

Visible Implant Elastomer

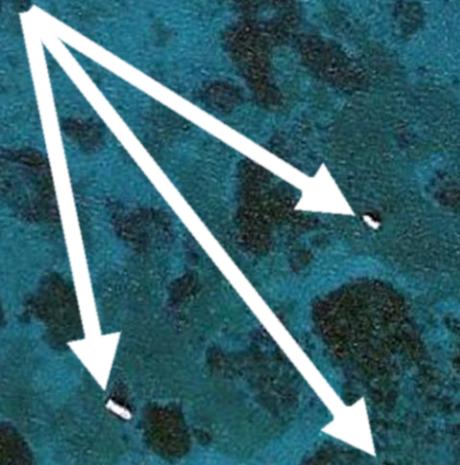


Recapture Summary

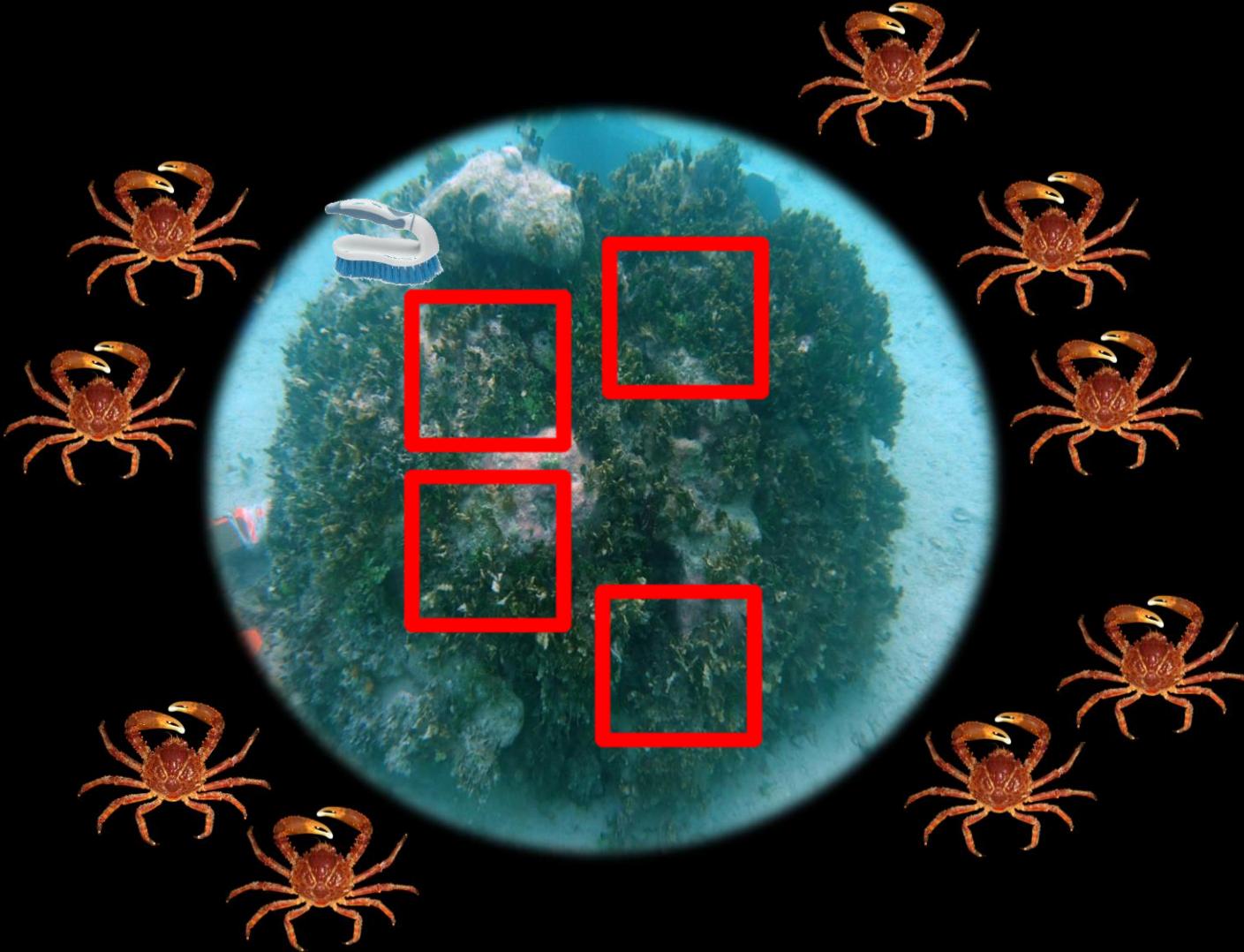




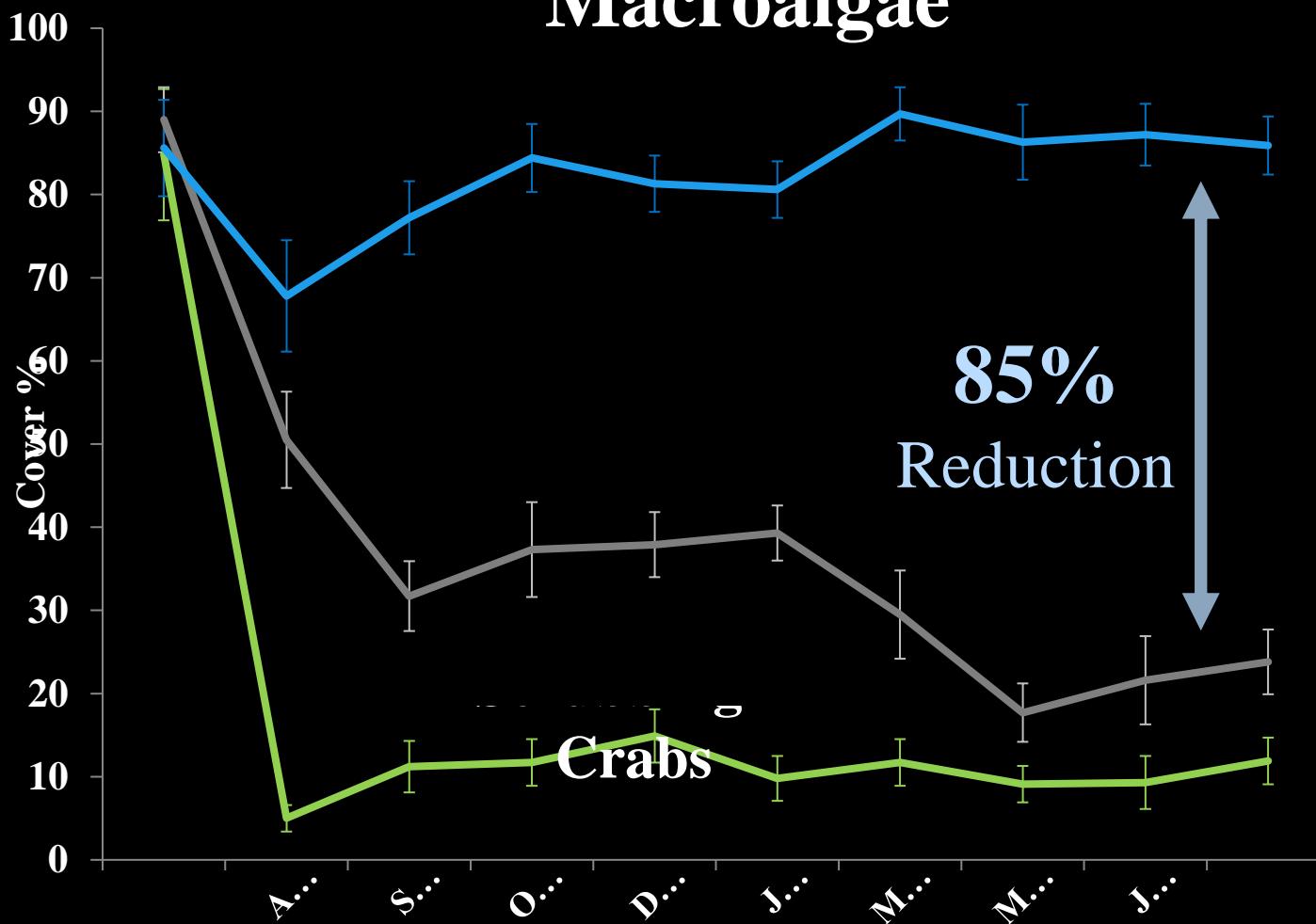
Boats



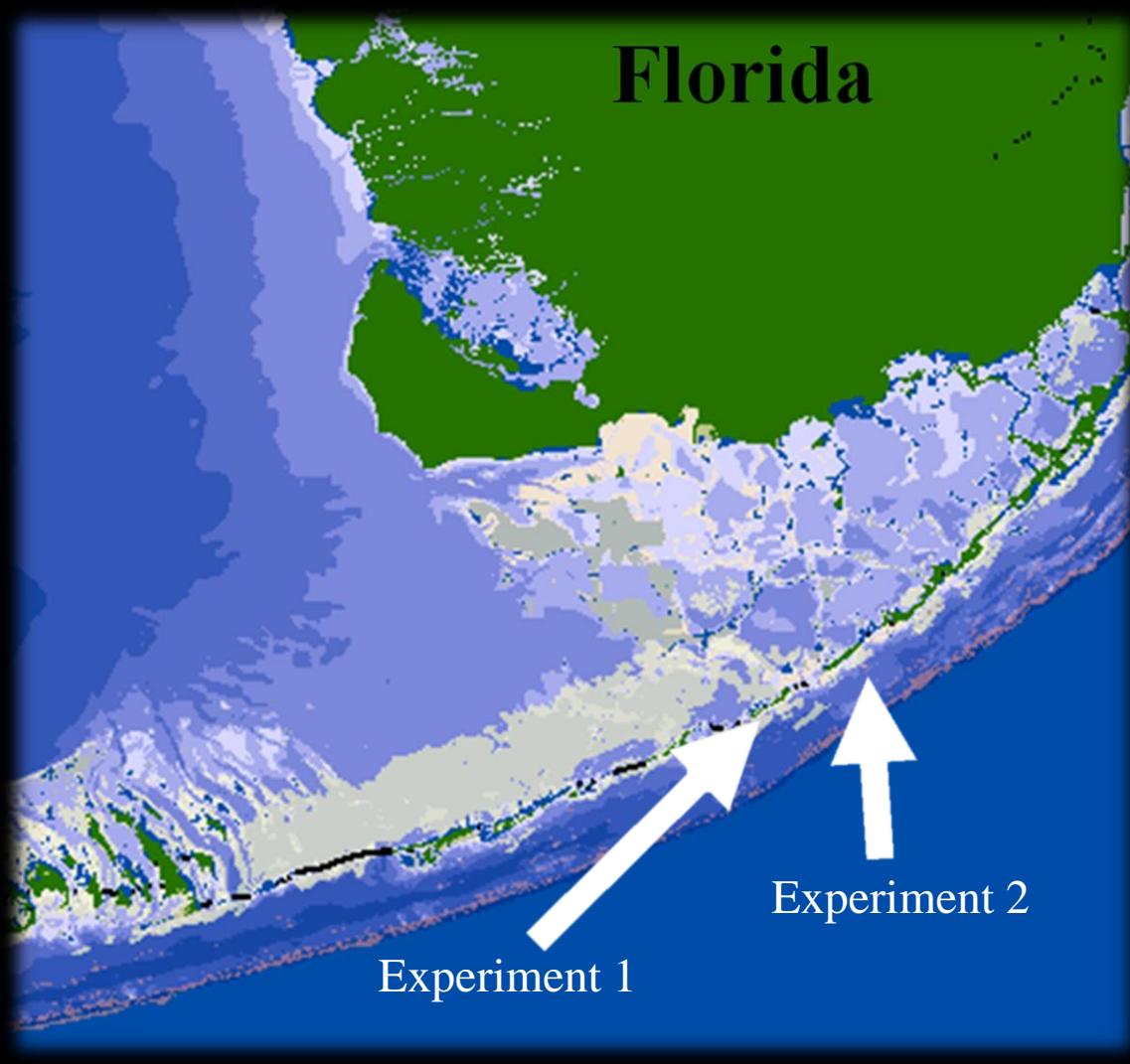




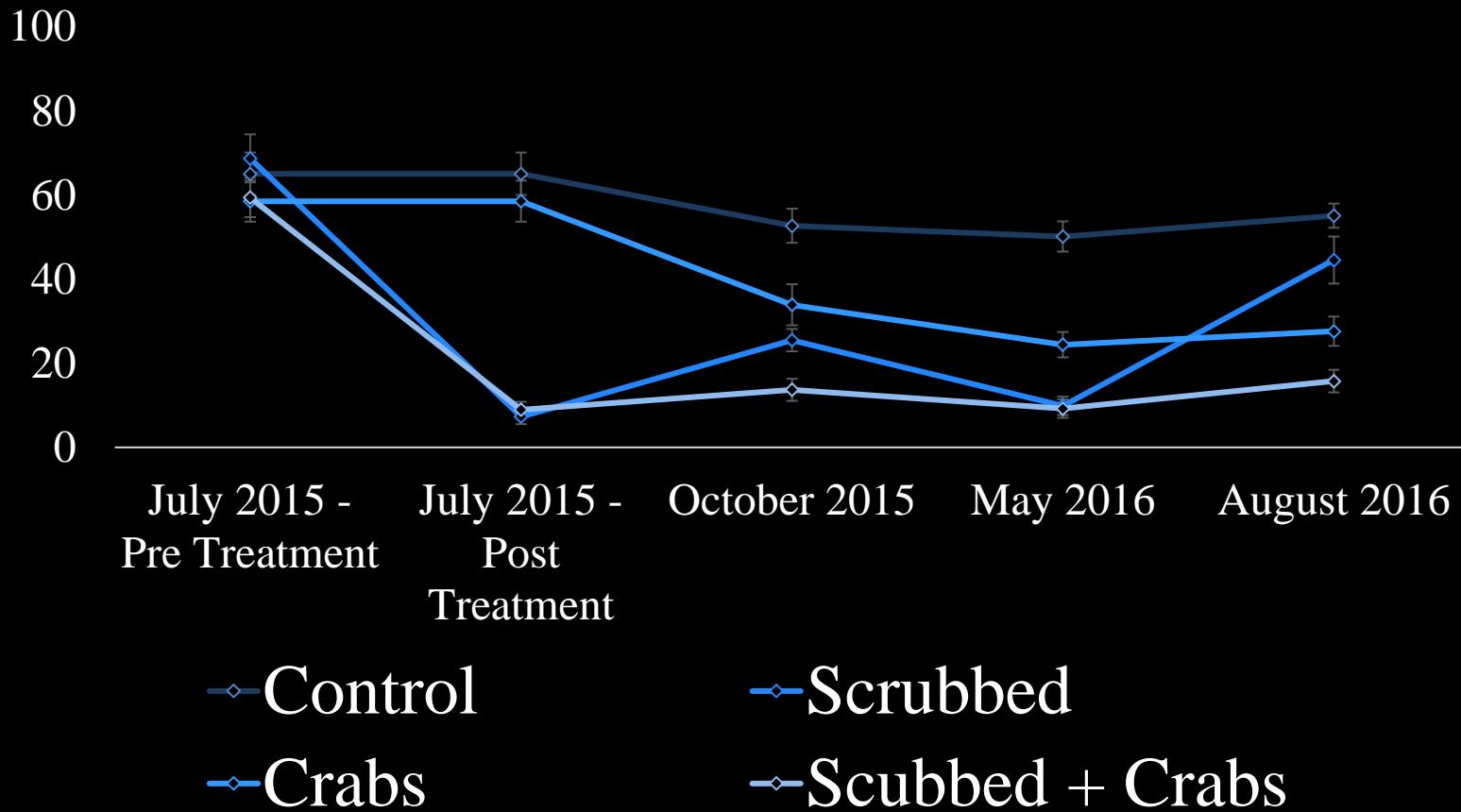
Macroalgae



Florida

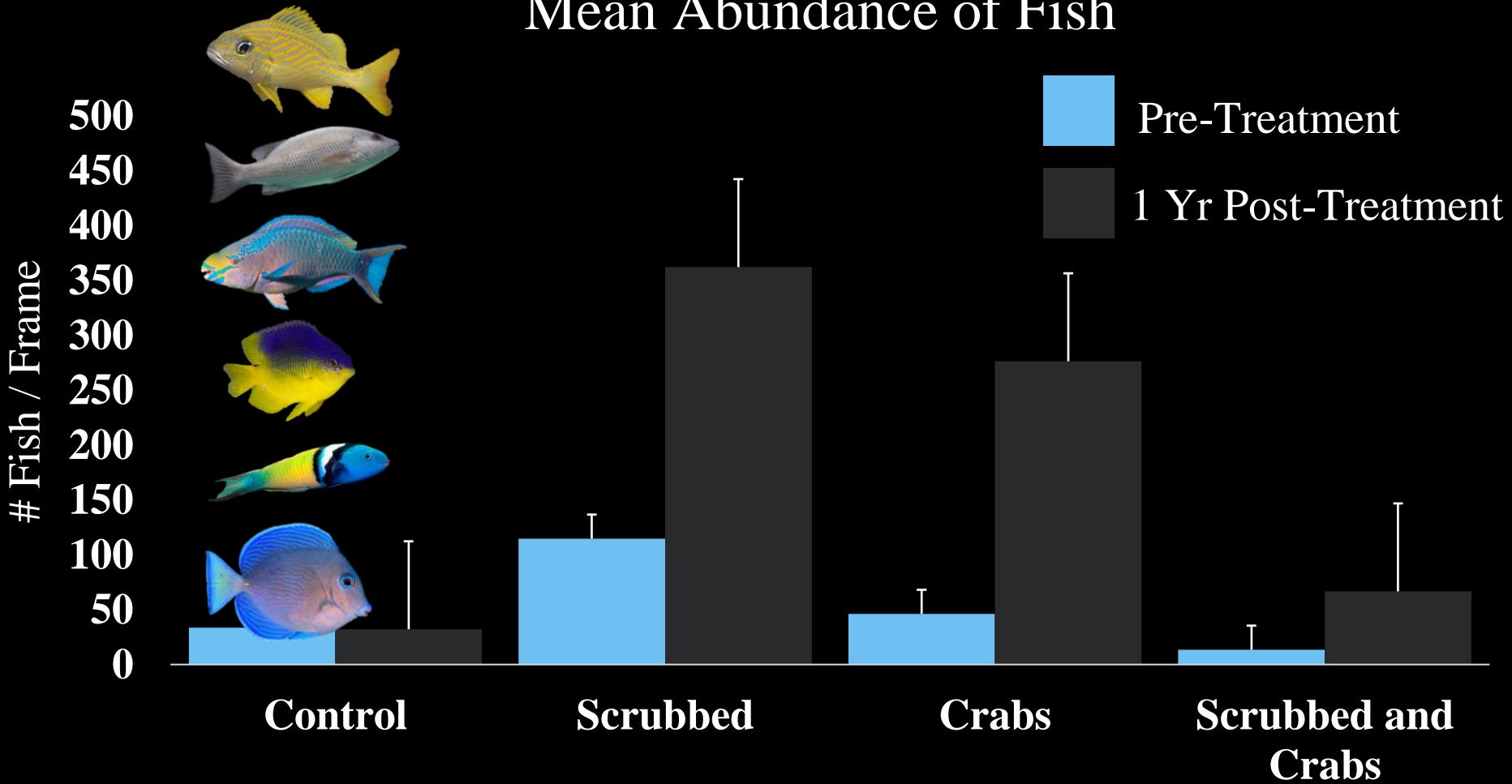


Percent Cover of Macroalgae

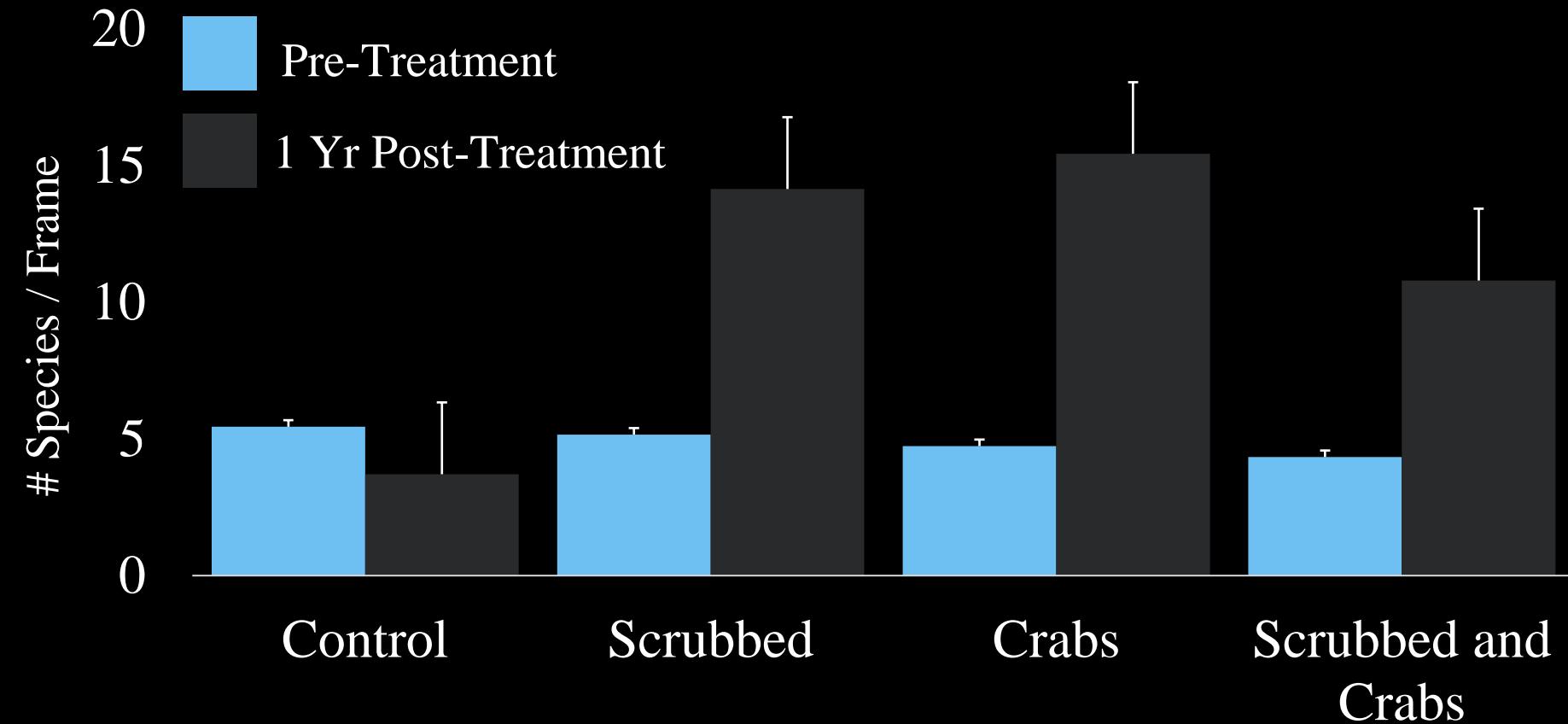




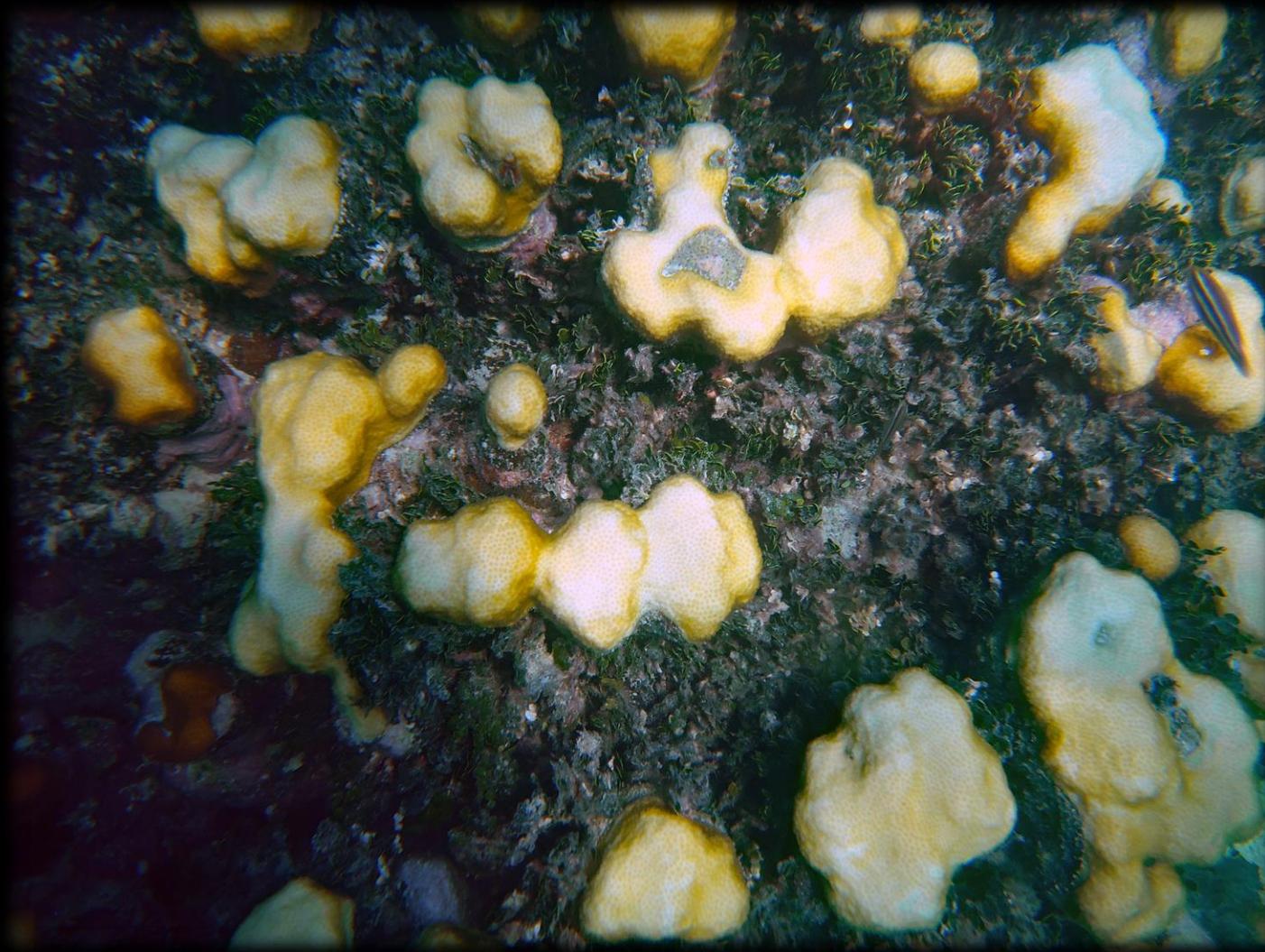
Mean Abundance of Fish

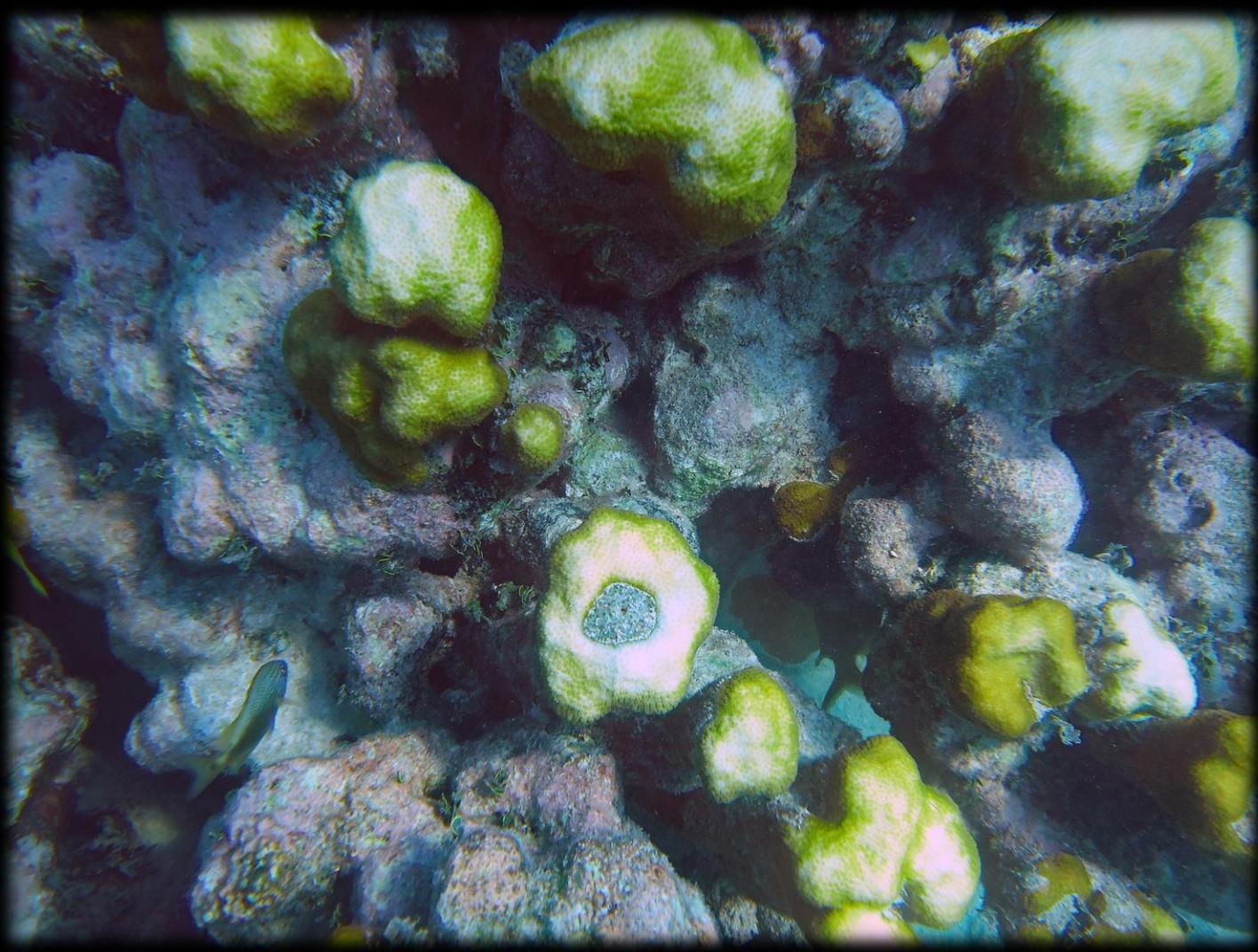


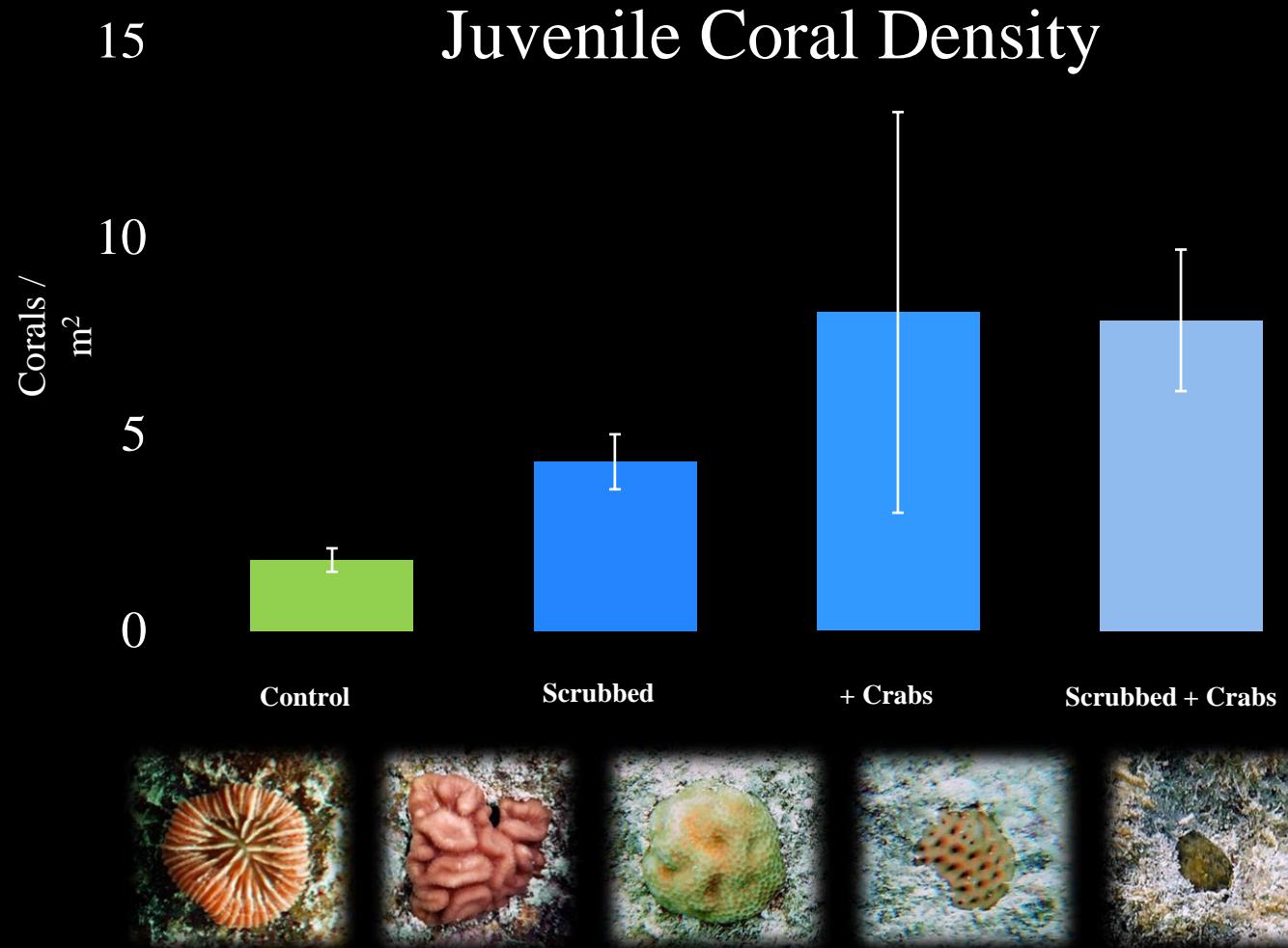
Mean Richness of Fishes

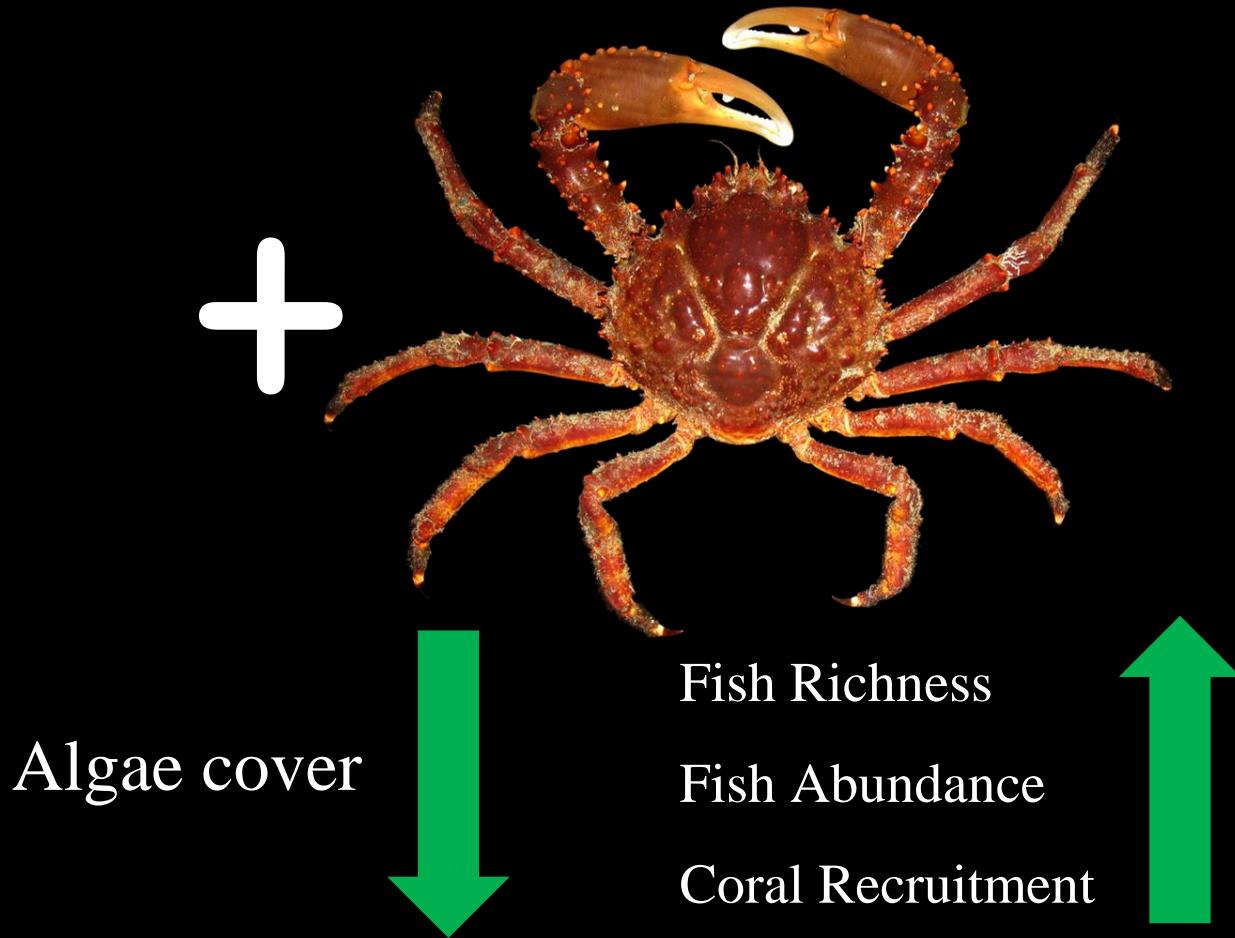


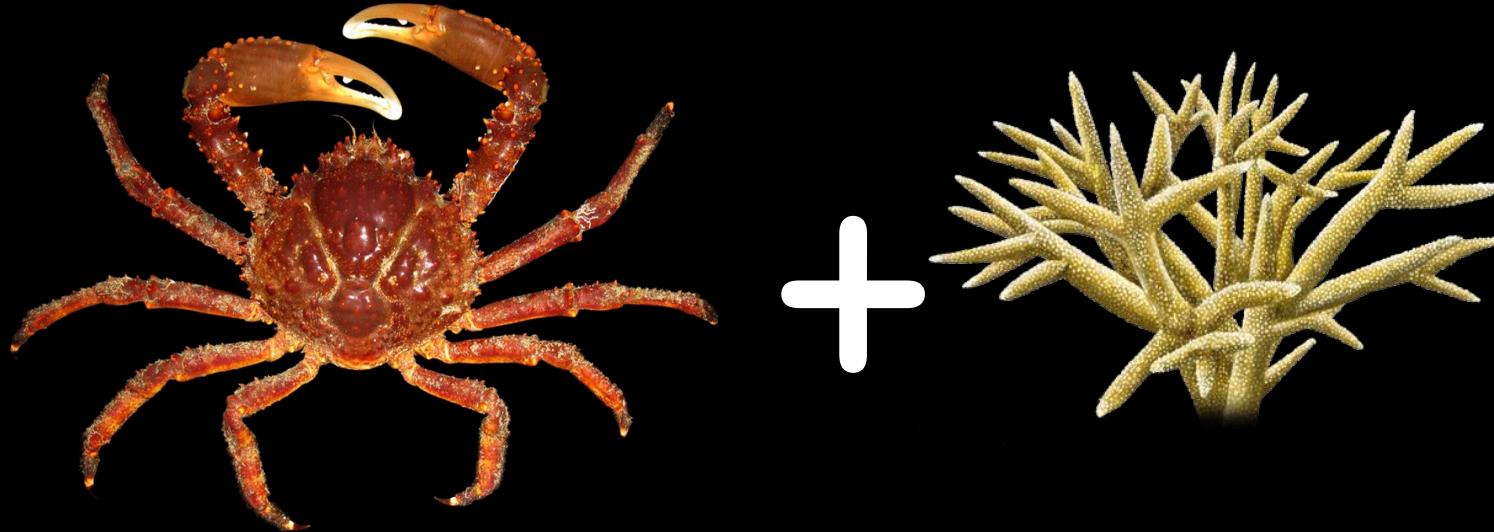












Strong potential application to
Coral Reef Restoration



Great, but what I really
need right now is
MORE CRABS!

So....
how do we
scale up
grazer enhancement?

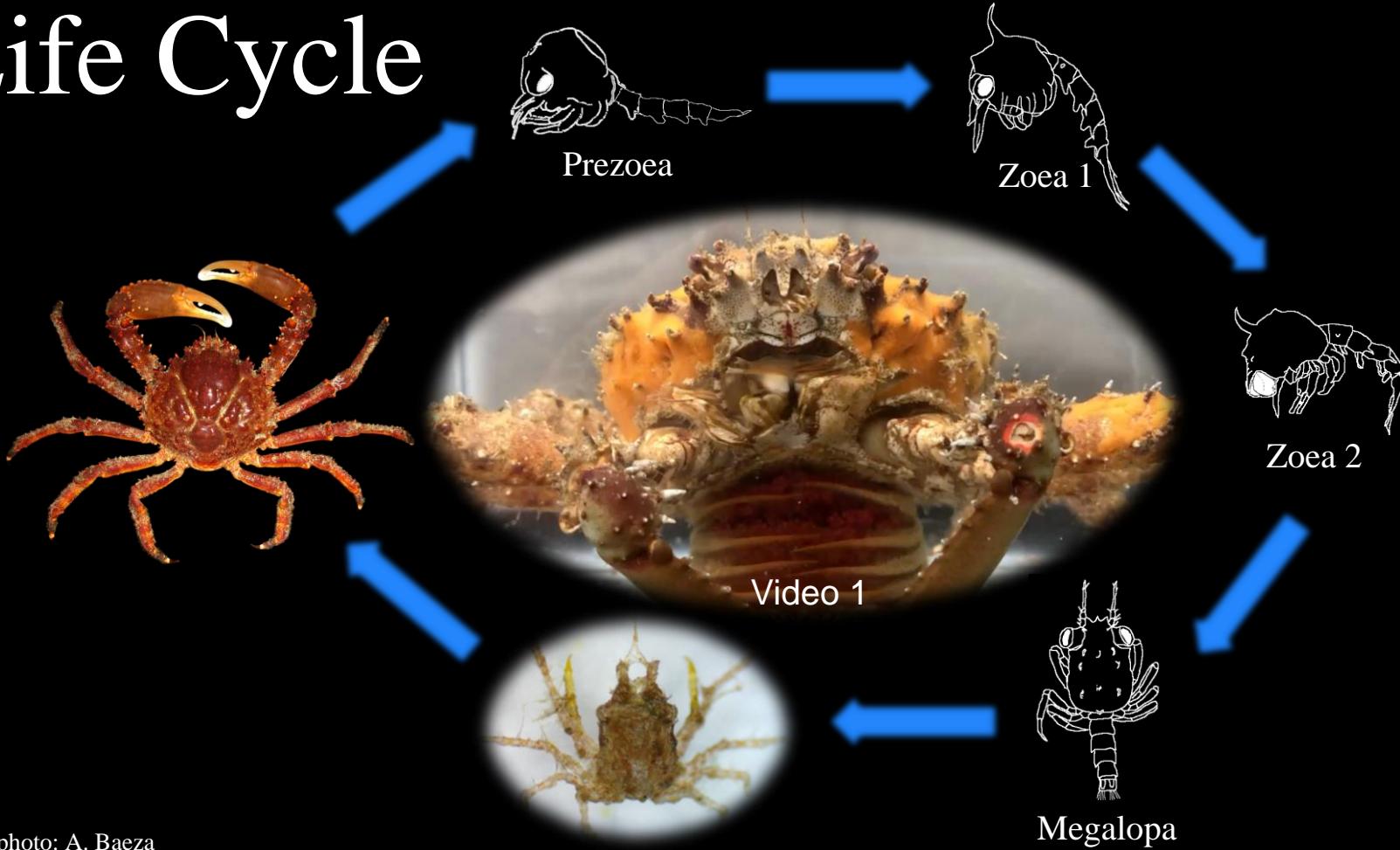
**TV
MA**

The TV MA rating logo is shown in green on a black background. The letters 'TV' are above 'MA'. Red paint splatters are applied across the entire logo, with more concentrated areas on the 'M' and 'A', creating a distressed and artistic look.

The following is intended only
for mature audiences.

Viewer discretion is probably unnecessary

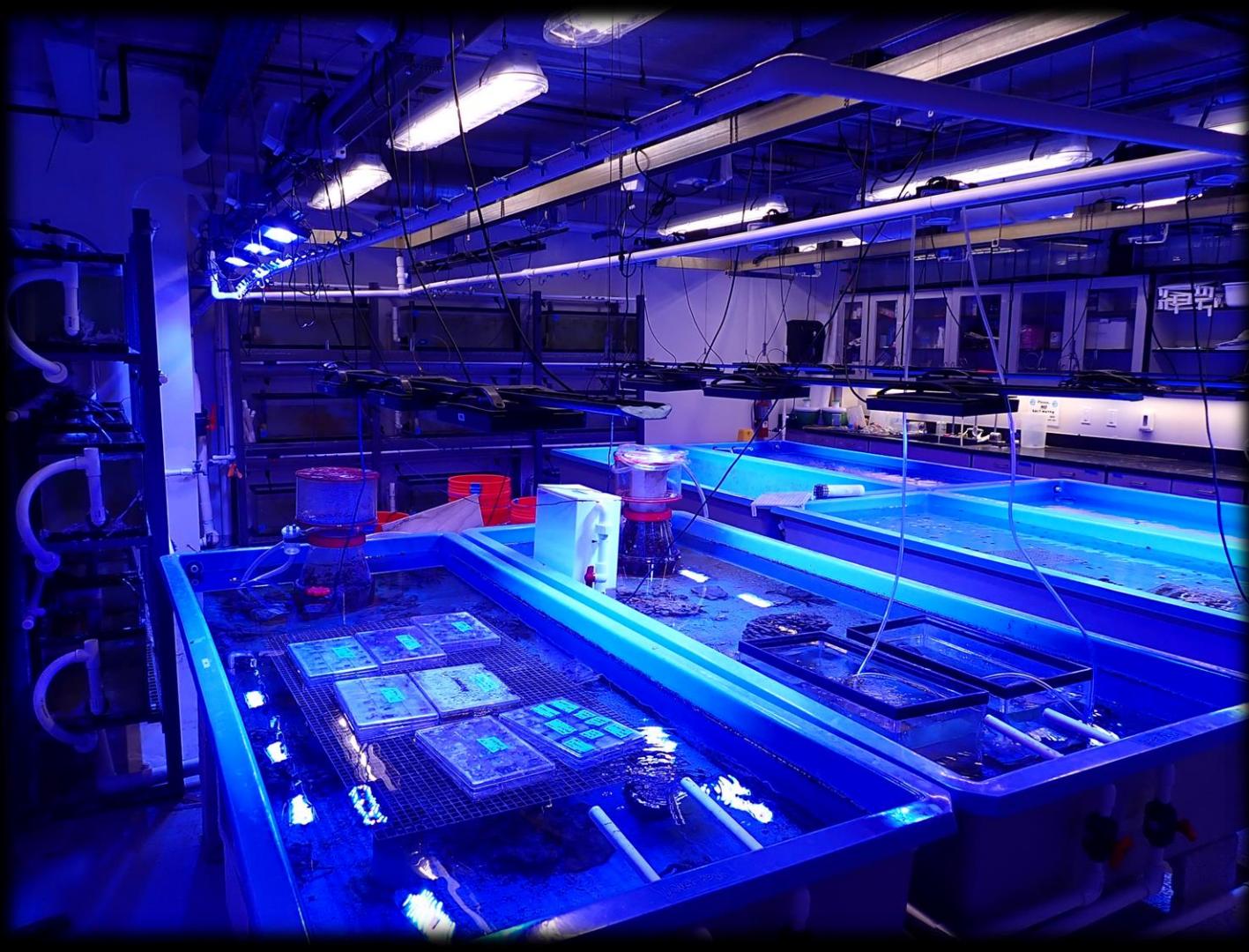
Life Cycle

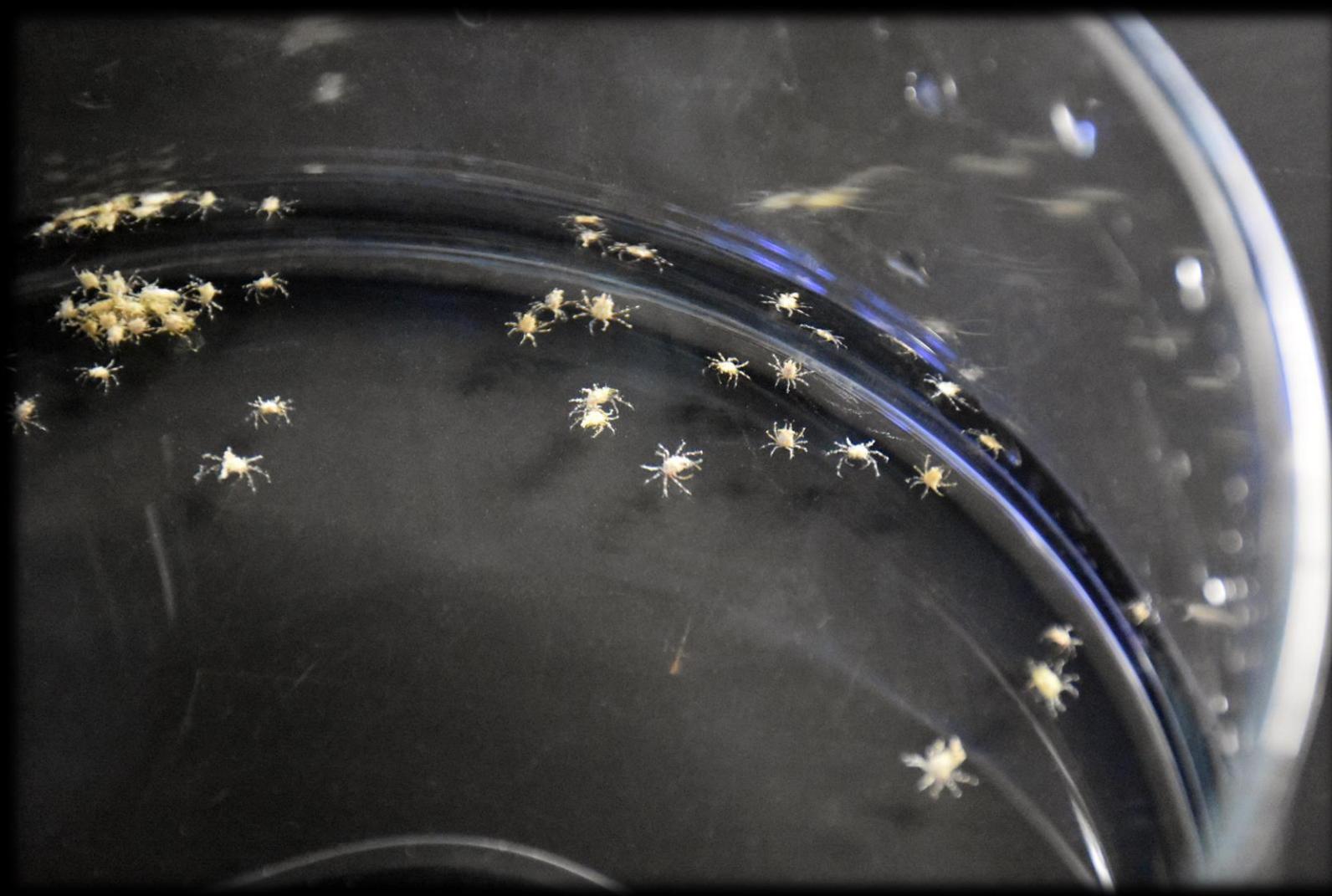


Adult photo: A. Baeza

Juv. photo and video: Shelby Perry

Line drawings: Provenzano and Brownell (1977)

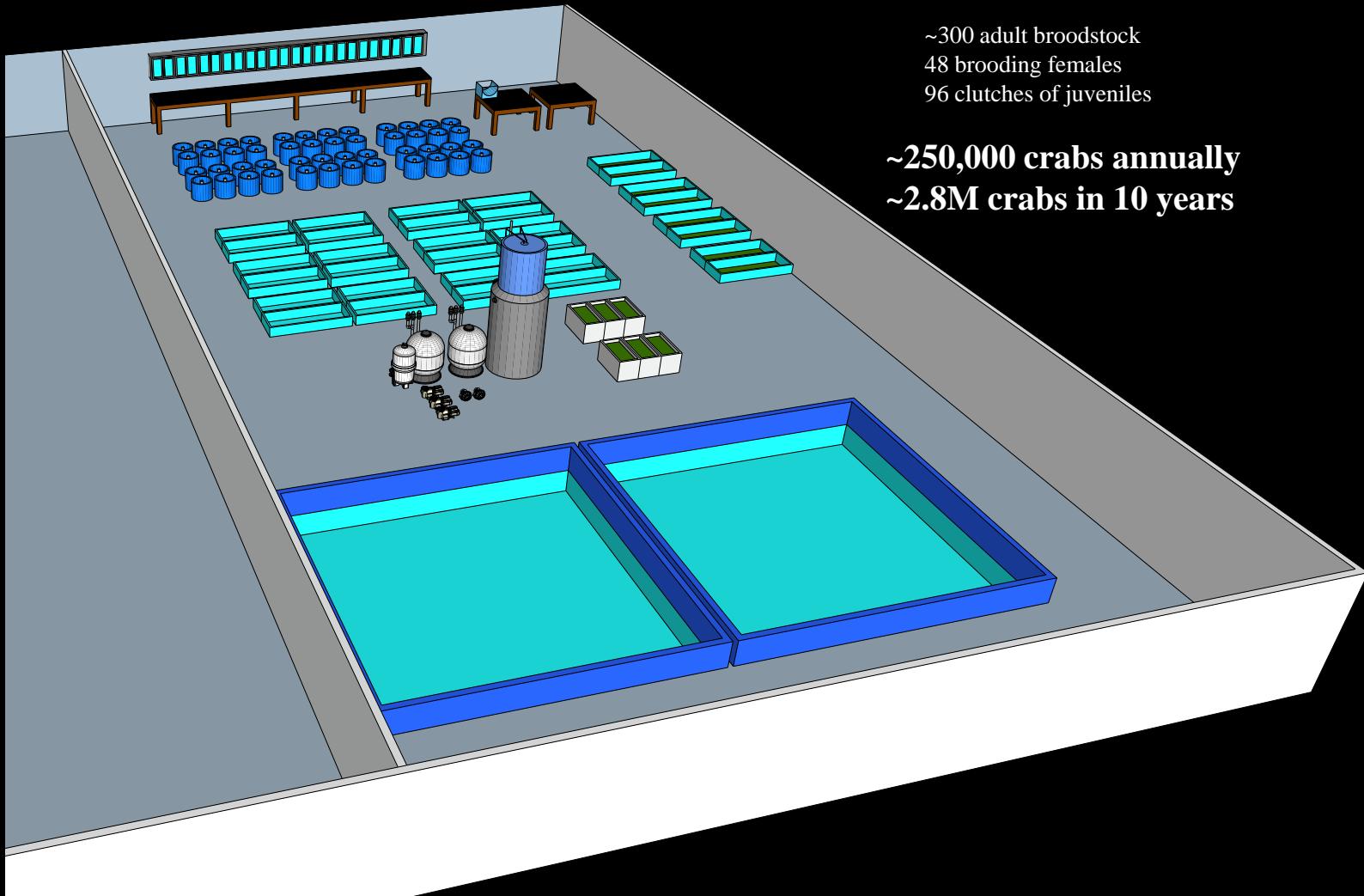






Mote's Aquaculture Research Park (MAP)

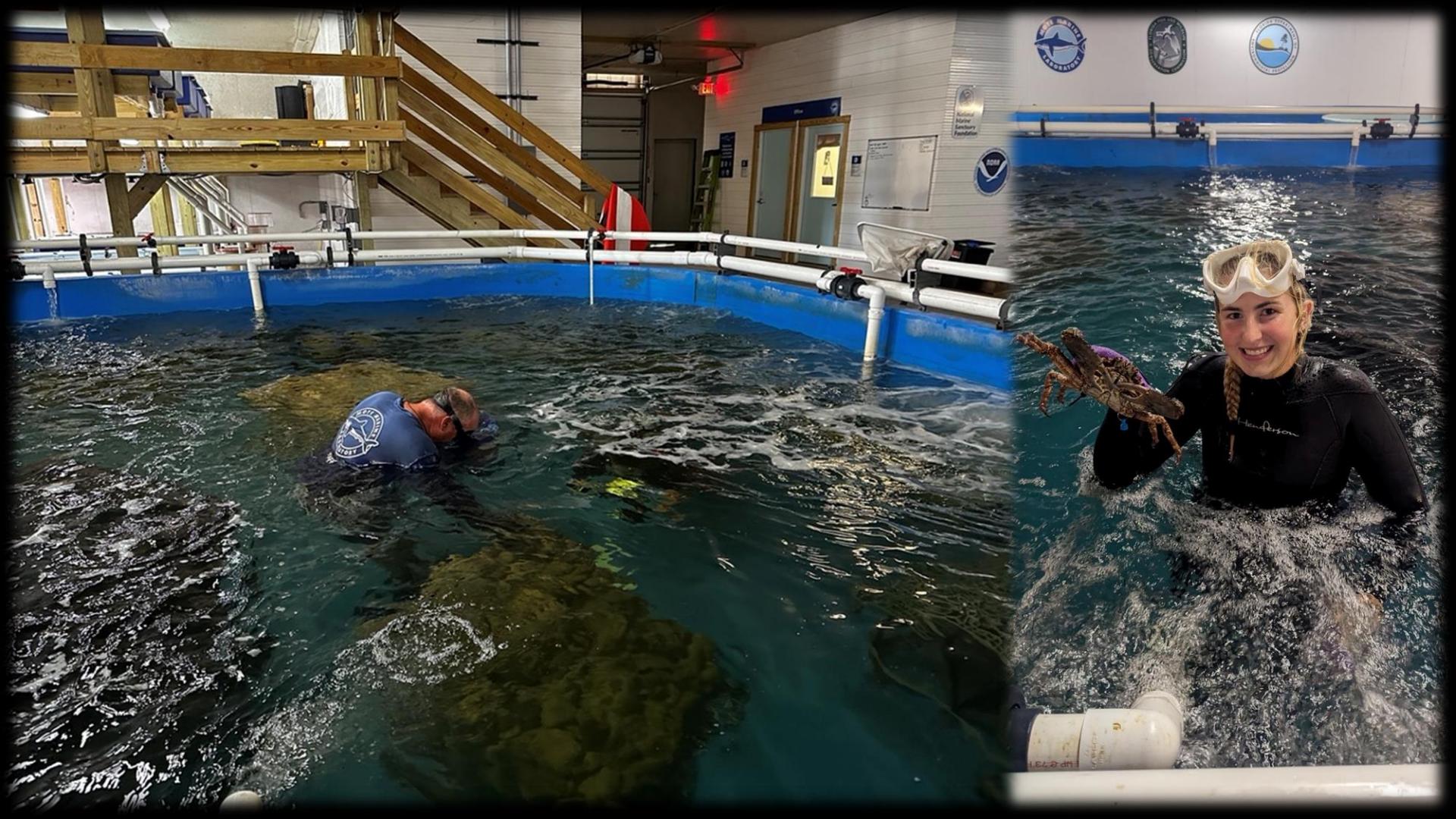












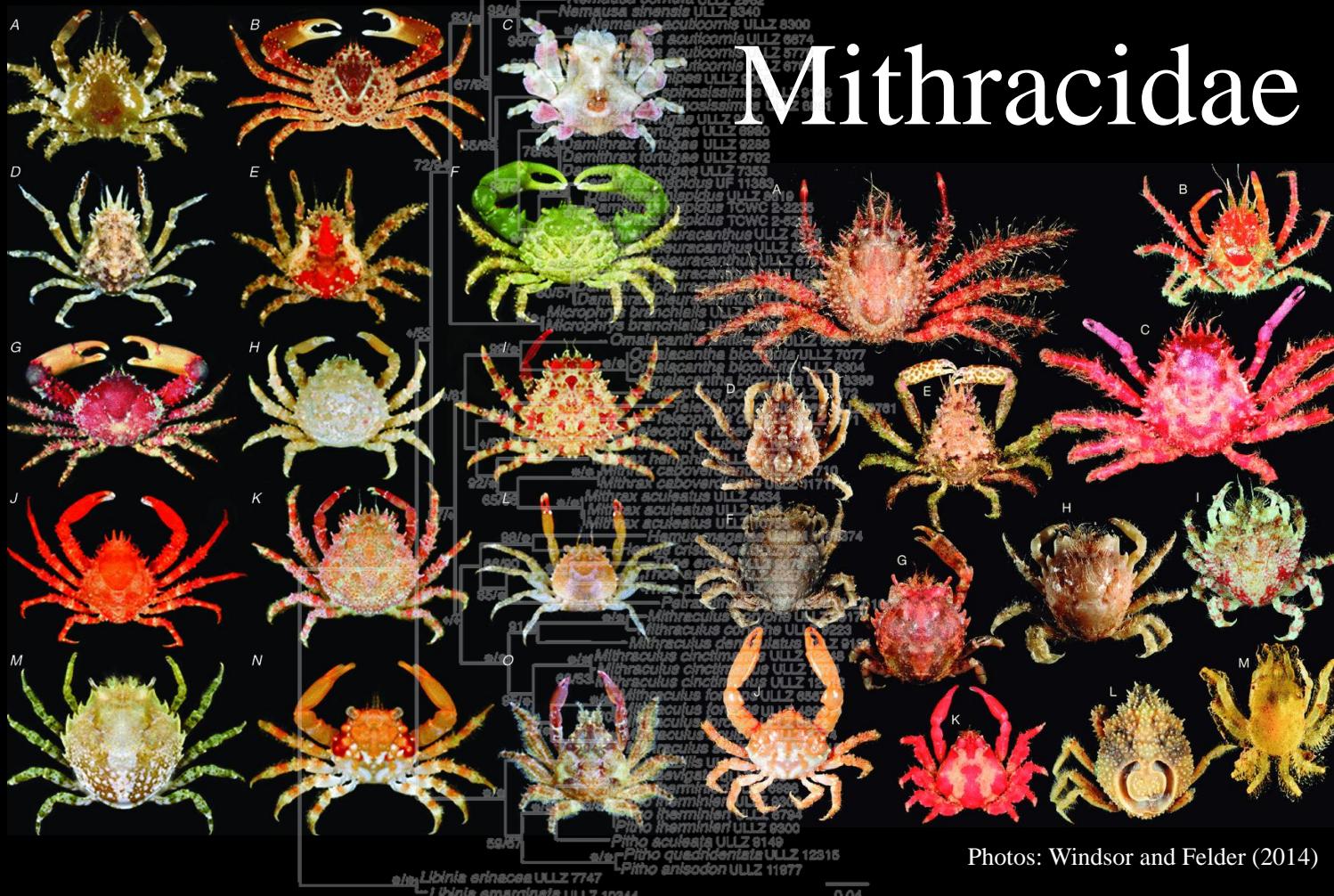




But wait....



Mithracidae





Optimizing herbivore assemblages for restocking to enhance coral recruitment

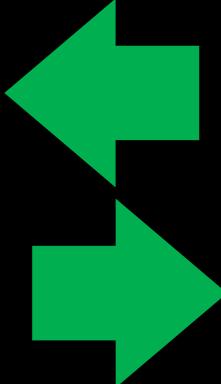
Collaborators: Mark Ladd & Jocelyn Karazsia NOAA SEFSC & SERO-HCD





Harnessing positive interactions in Coral Reef Restoration

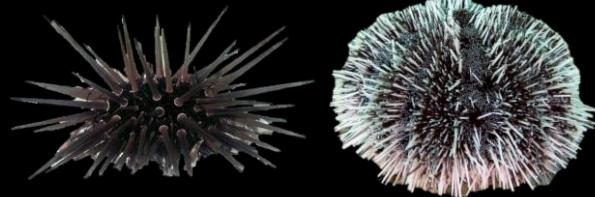
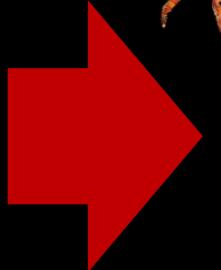
Jason Spadaro, Katie Bozza, Marina Pham, Ian Combs

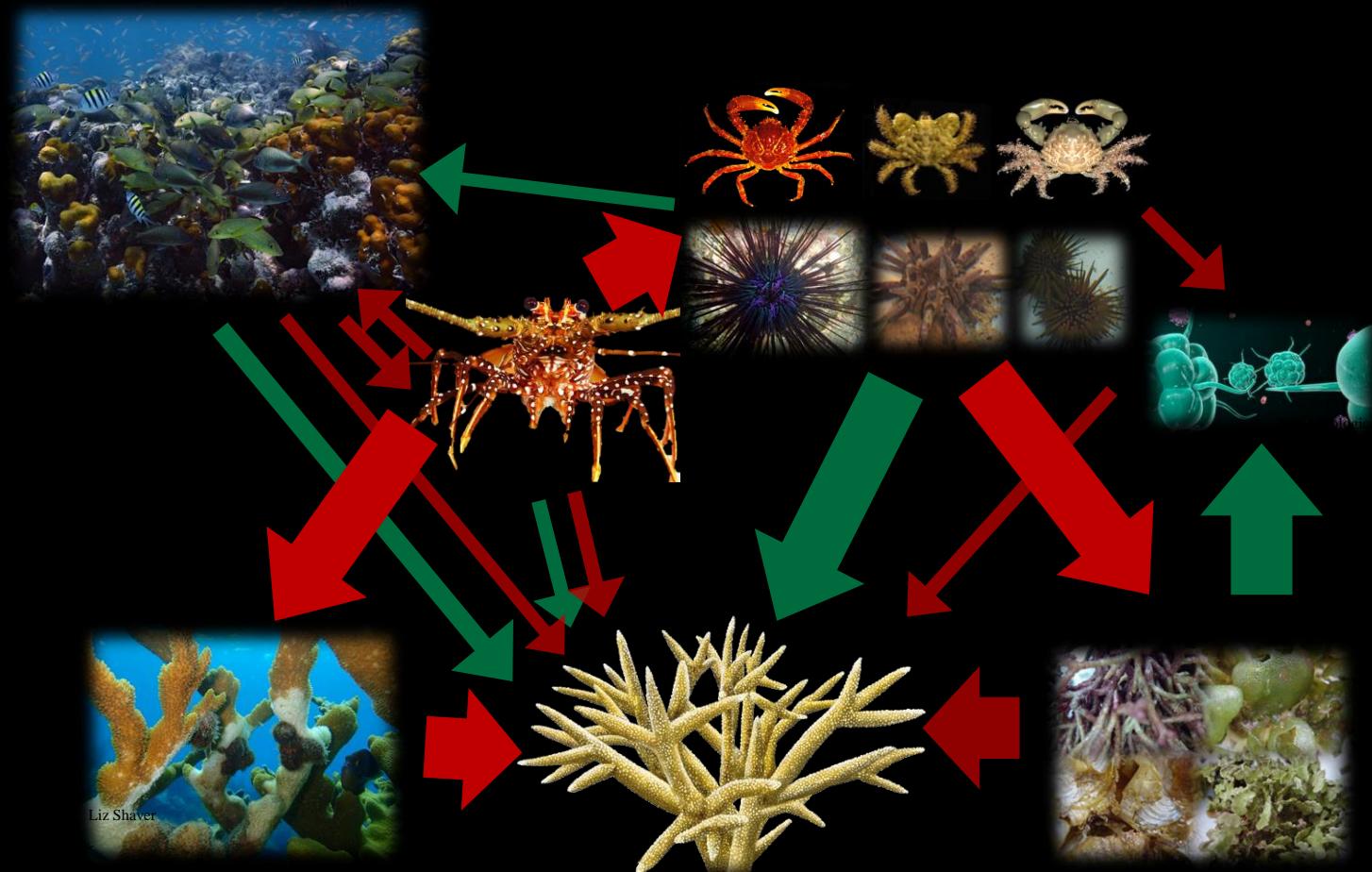




Identify and evaluate potential direct and indirect bottlenecks to coral reef restoration

Collaborators: Dr. Abigail Clark (CFK), Dr. Gayathiri Gnanalingam (Univ. of Otago)





Acknowledgements



National
Marine Sanctuary
Foundation



INAPESCA



MarSci-LACE[®]
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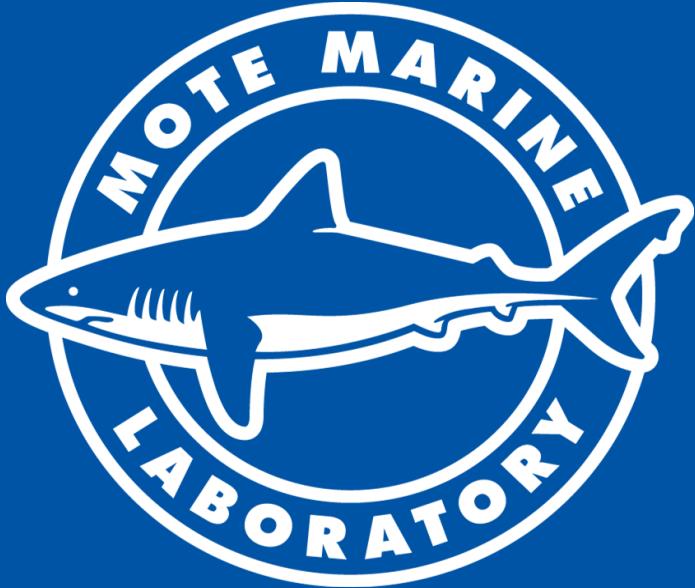


Smithsonian Institution
Caribbean Coral Reefs Ecosystem Program
www.ccre.si.edu



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All of the work presented was permitted by
the Florida Keys National Marine Sanctuary
and the Florida Fish and Wildlife
Conservation Commission



Thank you

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