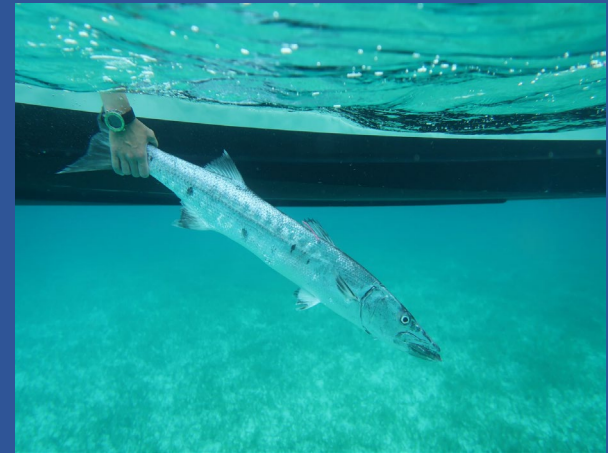
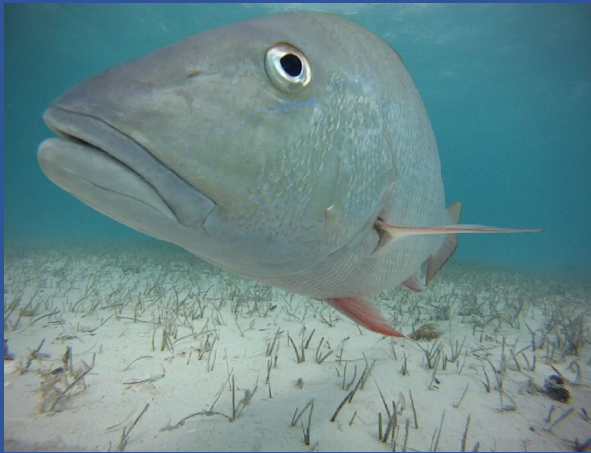


The FISHSCAPE project

Fish In Seagrass Habitats: Seascape Connectivity Across Protected Ecosystems



PIs: Alastair Harborne, Justin Campbell, James Fourqurean, Yannis Papastamatiou, Rolando Santos

Florida International University

<https://environment.fiu.edu/what-we-study/projects/fishscape/>

Management Technical Advisory Group

- “...establish a management transition advisory group (MTAG) to ensure effective collaboration between the project PI(s) and end users occurs and research results are transferred to the end users.”
- “The end users can then help facilitate the transfer and use of information derived from this work for management applications, including sustainable fisheries management, habitat conservation and protection, and protection of listed threatened or endangered species.”

Last Name	First Name	Title	Organization
Bruckner	Andy	Research Coordinator	NOAA - FKNMS
McDonough	Vanessa	Fishery and Wildlife Biologist	Biscayne NP
Pollock	Clayton	Fisheries Biologist	Dry Tortugas NP
Serafy	Joe	Research Fishery Biologist	NOAA/NMFS/SEFSC
Parr	Nick	Aquatic Preserves Manager	FDEP
Ferraro	Trudy	Biological Scientist	FDEP - John Pennekamp
Boucek	Ross	FL Keys Initiative Manager	Bonefish & Tarpon Trust
Morley	Dani	Assistant Research Scientist	FWC
Collier	Chip	Deputy Director for Science	South Atlantic Fishery Management Council

Background



- Many fishes use seagrass for foraging
- Marine plants poorly represented in MPAs
- FKNMS SPAs contain only 3.8 km² of seagrass habitat compared to 8.8 km² of reef
- *How much seagrass is necessary to support reef-fish foraging?*

Global Ecology and Biogeography, (Global Ecol. Biogeogr.) () 25, 324–334

RESEARCH
PAPER

Marine protected areas are insufficient to conserve global marine plant diversity

Barnabas H. Daru* and Peter C. le Roux



Biological Conservation 144 (2011) 692–702

Contents lists available at ScienceDirect

Biological Conservation

journal homepage: www.elsevier.com/locate/biocon

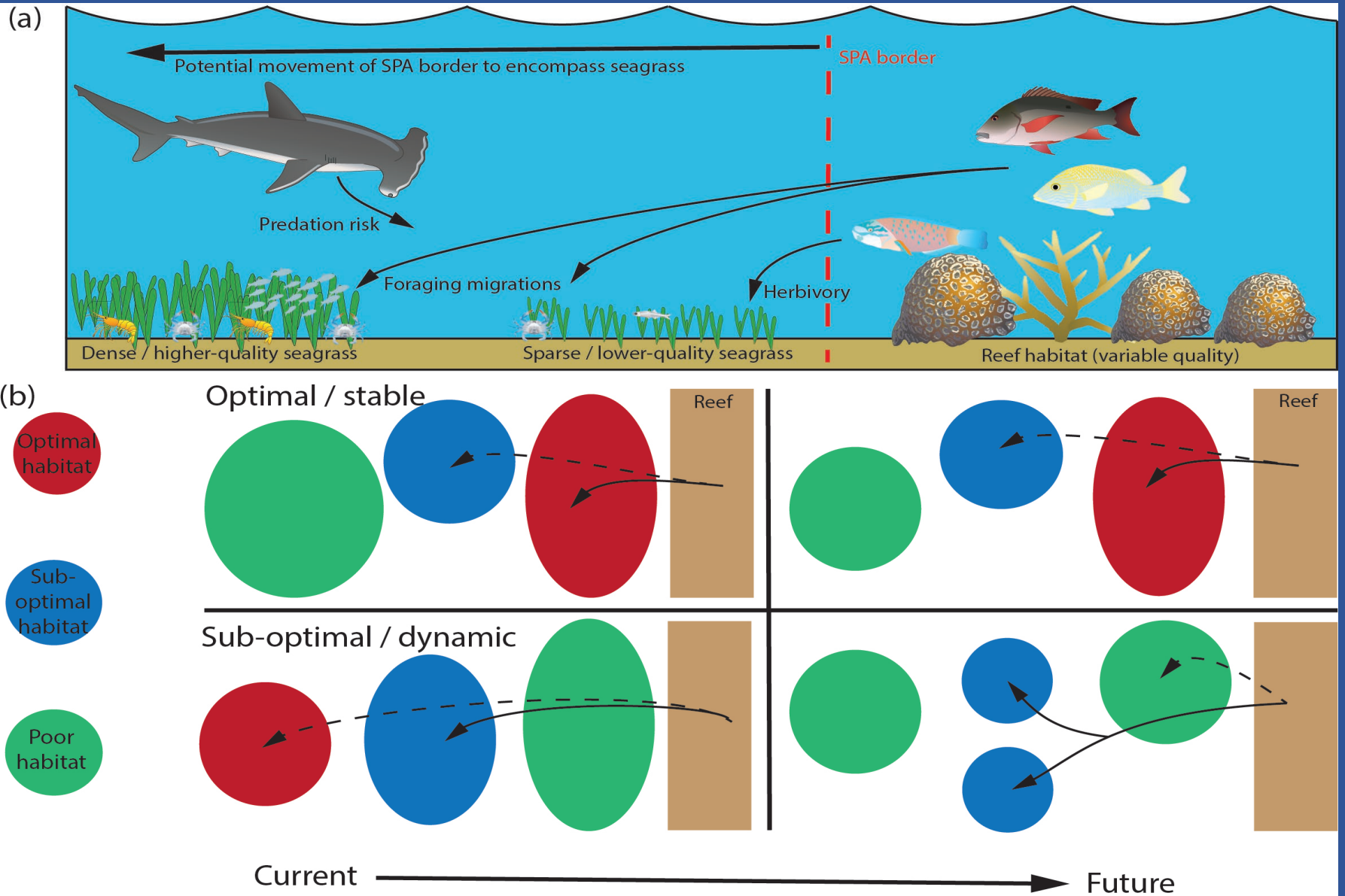


Review

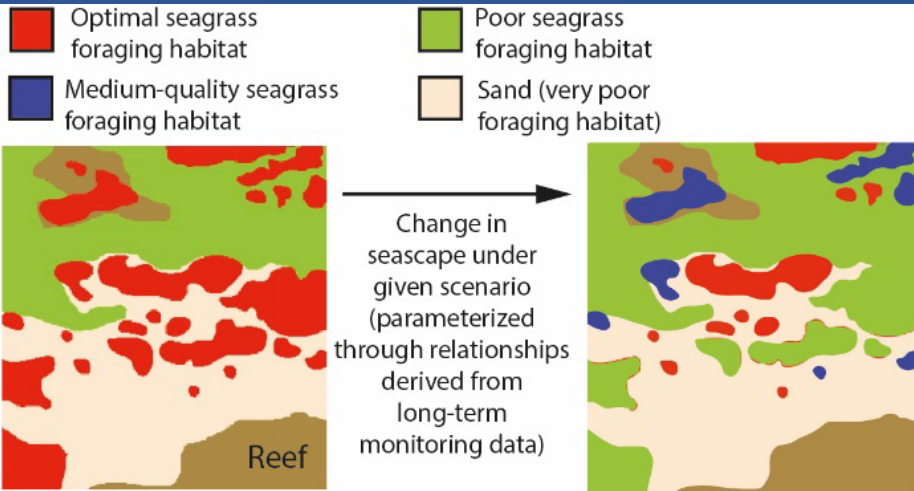
Consequences of adult and juvenile movement for marine protected areas

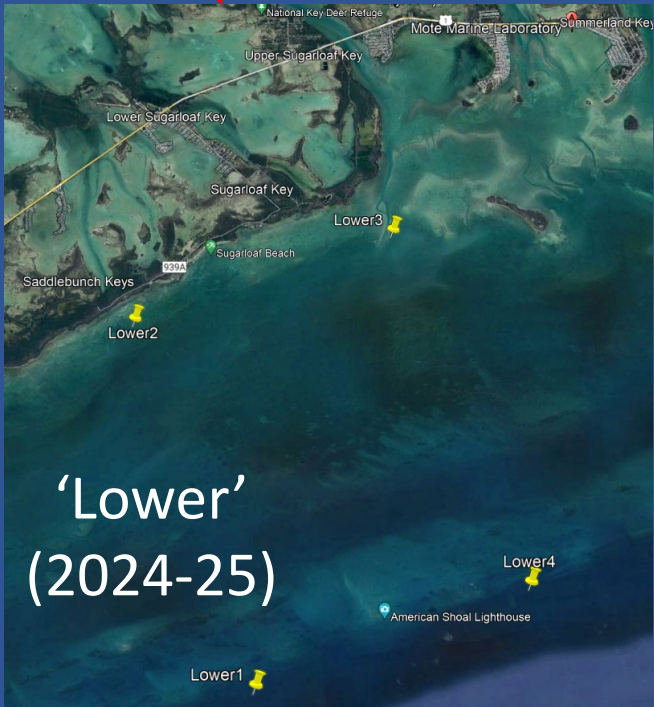
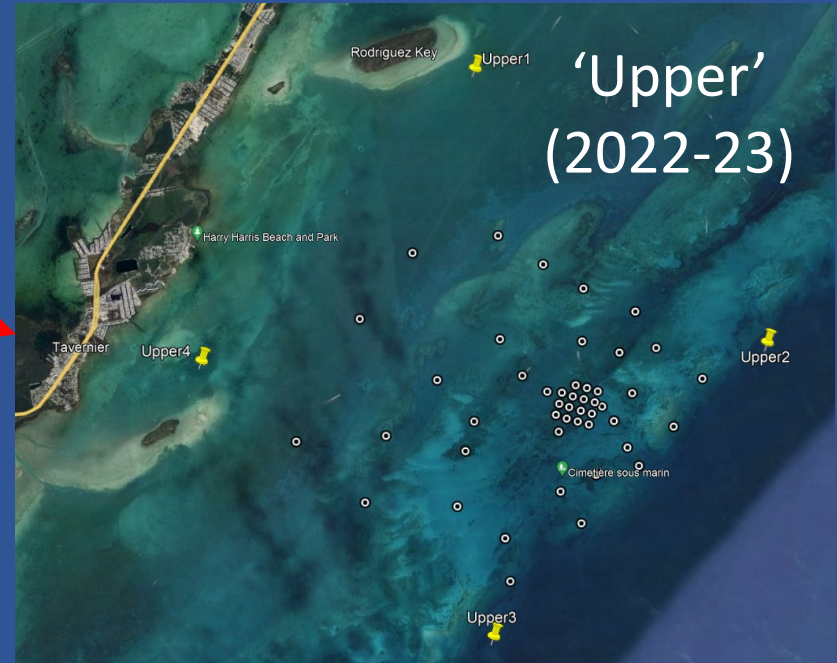
Arnaud Grüss^{a,*}, David M. Kaplan^a, Sylvie Guénette^b, Callum M. Roberts^c, Louis W. Botsford^d

Multiple factors control foraging

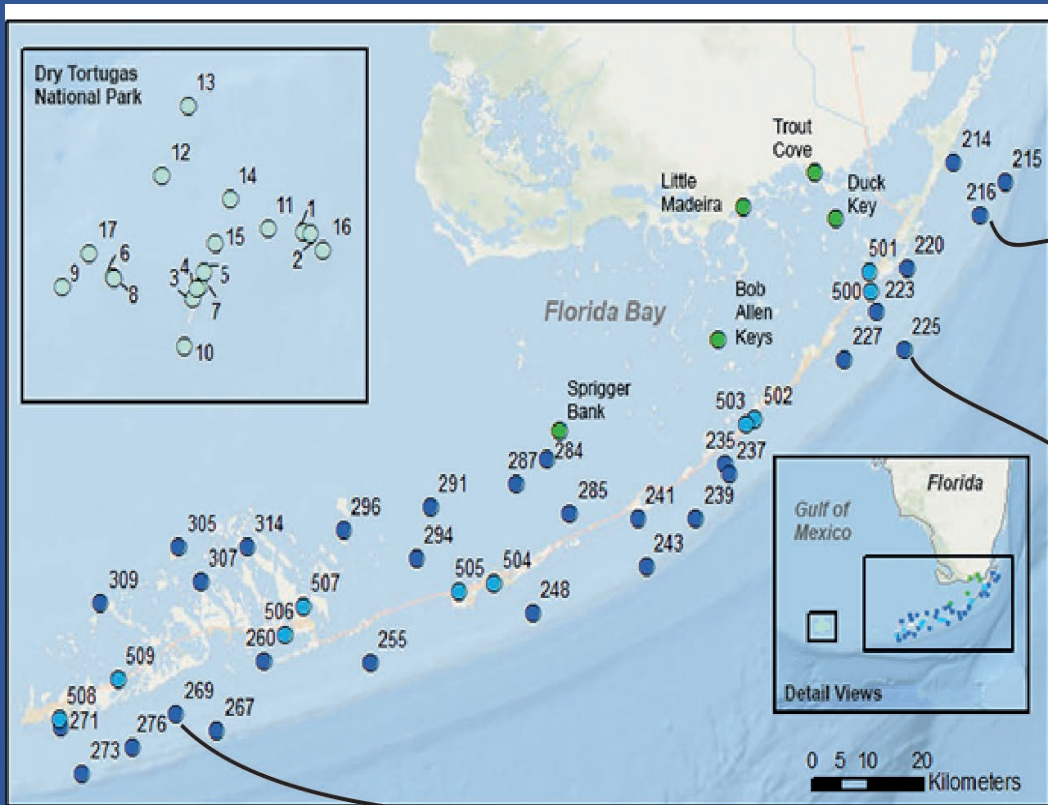


Project components (2021-2026)





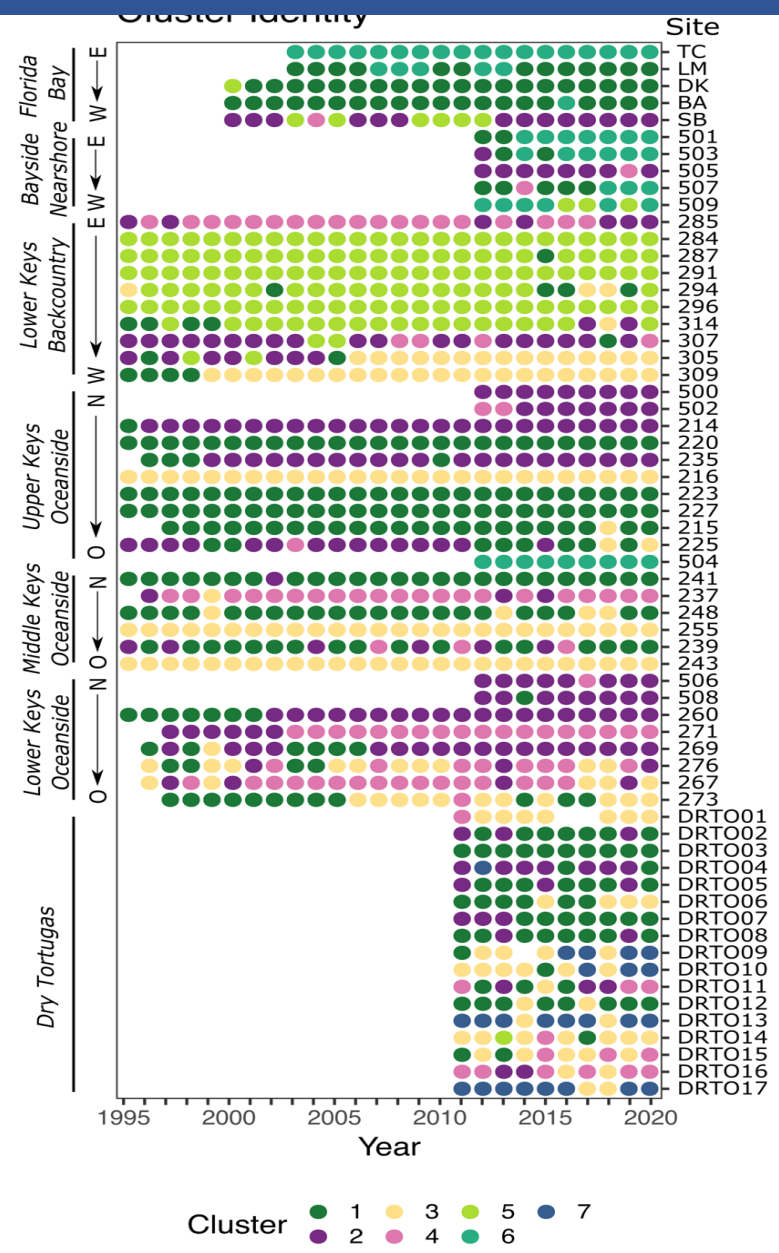
Fourqorean lab long-term monitoring



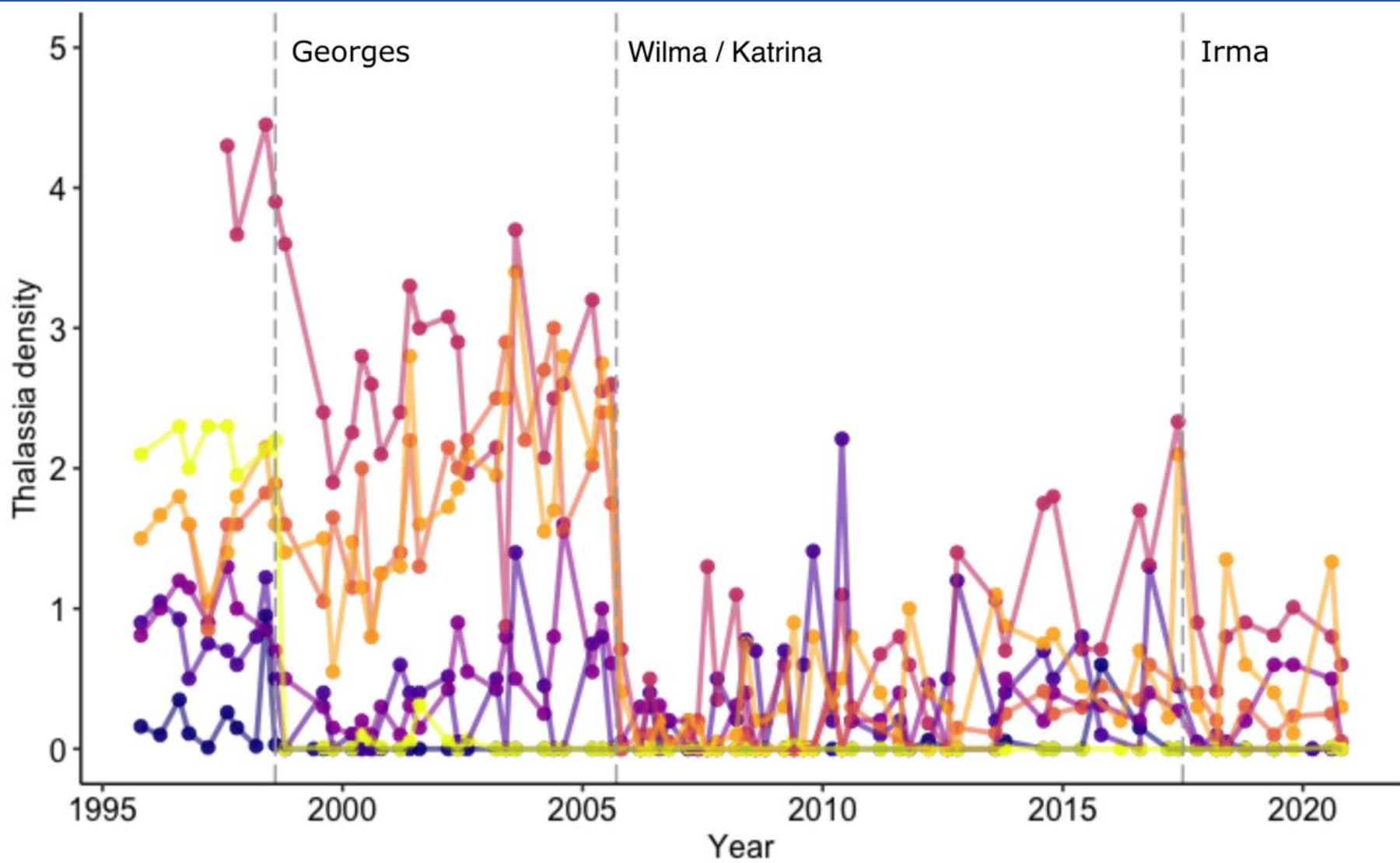
216

225

269



Cluster 1 2 3 4 5 6 7



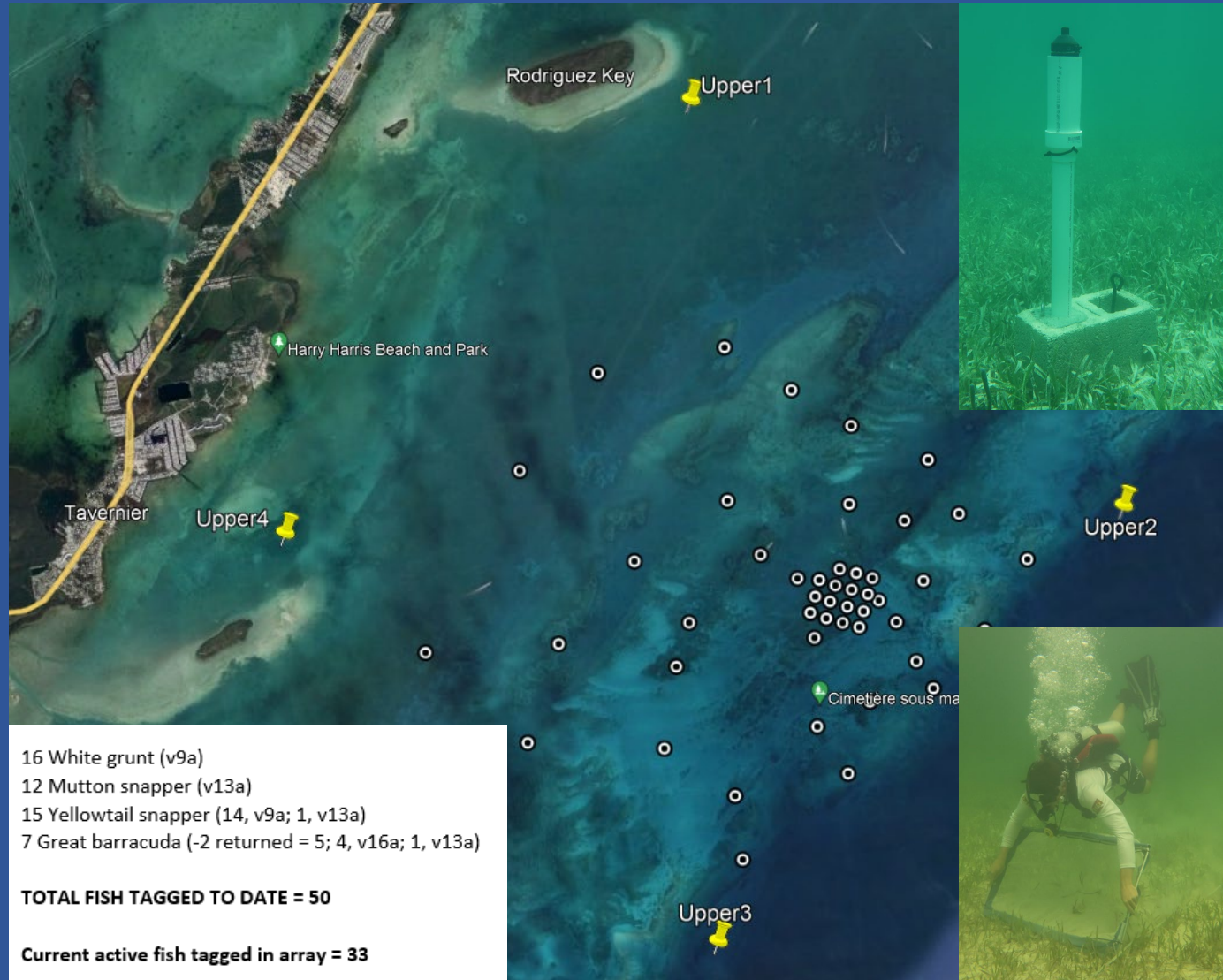
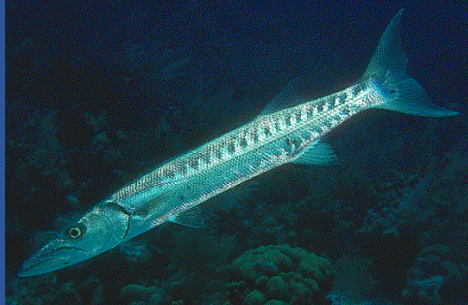
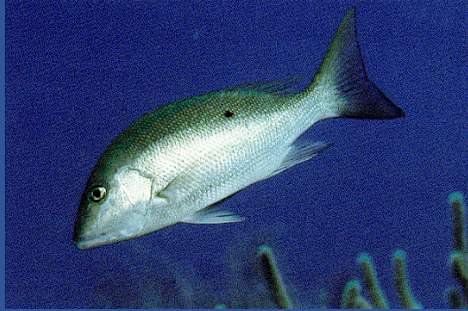
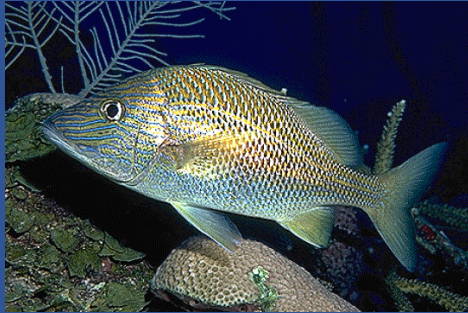
STATION

● 216	● 255	● 276	● 309
● 243	● 273	● 305	

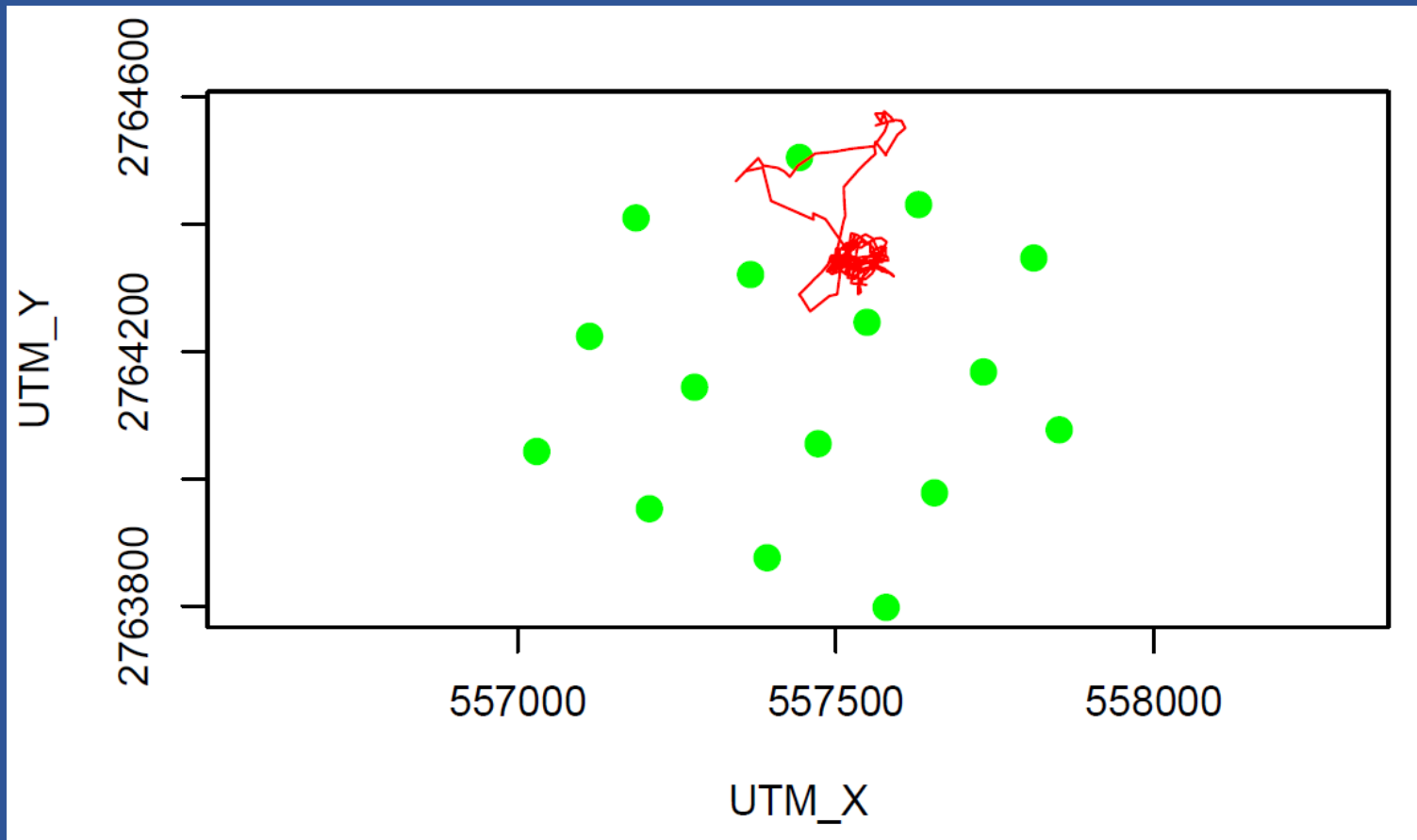
Data collection & outputs

- Fish tracking (15 of barracuda, mutton snapper, yellowtail snapper, white grunt)
- Temperature / currents
- Invertebrate sweeps
- Prey accessibility experiment
- (Stomach contents)
- Fish abundance (RVC, seagrass surveys)
- BRUVs
- Stable isotopes
- Multi-scale habitat mapping (satellites, drones) including ground truthing
- [E-scapes]
- Seagrass grazing
- Fish physiology
- [Bioenergetic models]
- Seagrass monitoring / change
- *User-friendly online tool that summarizes all the project findings*

Fish tracking + SIA samples



VERY preliminary outputs – yellowtail 9405

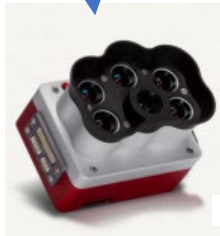


Drone mapping - Workflow

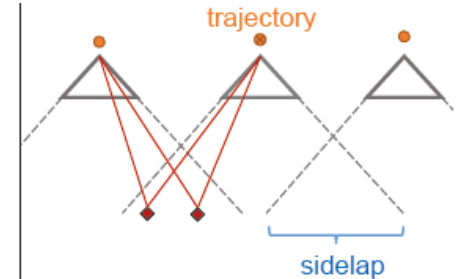
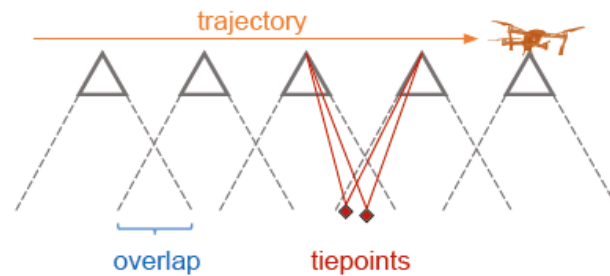


Pix4Dcapture

1. DATA ACQUISITION

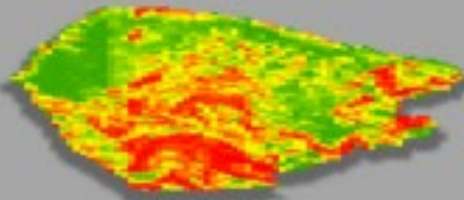


MicaSense Rededge Multispectral Camera



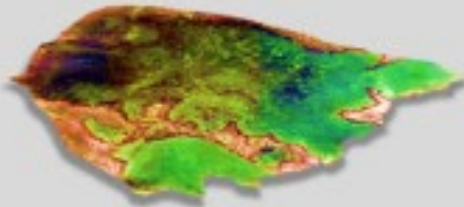
E(nergy)-scapes

E-scape maps



Food acquisition

+



Habitat Resource Index

+



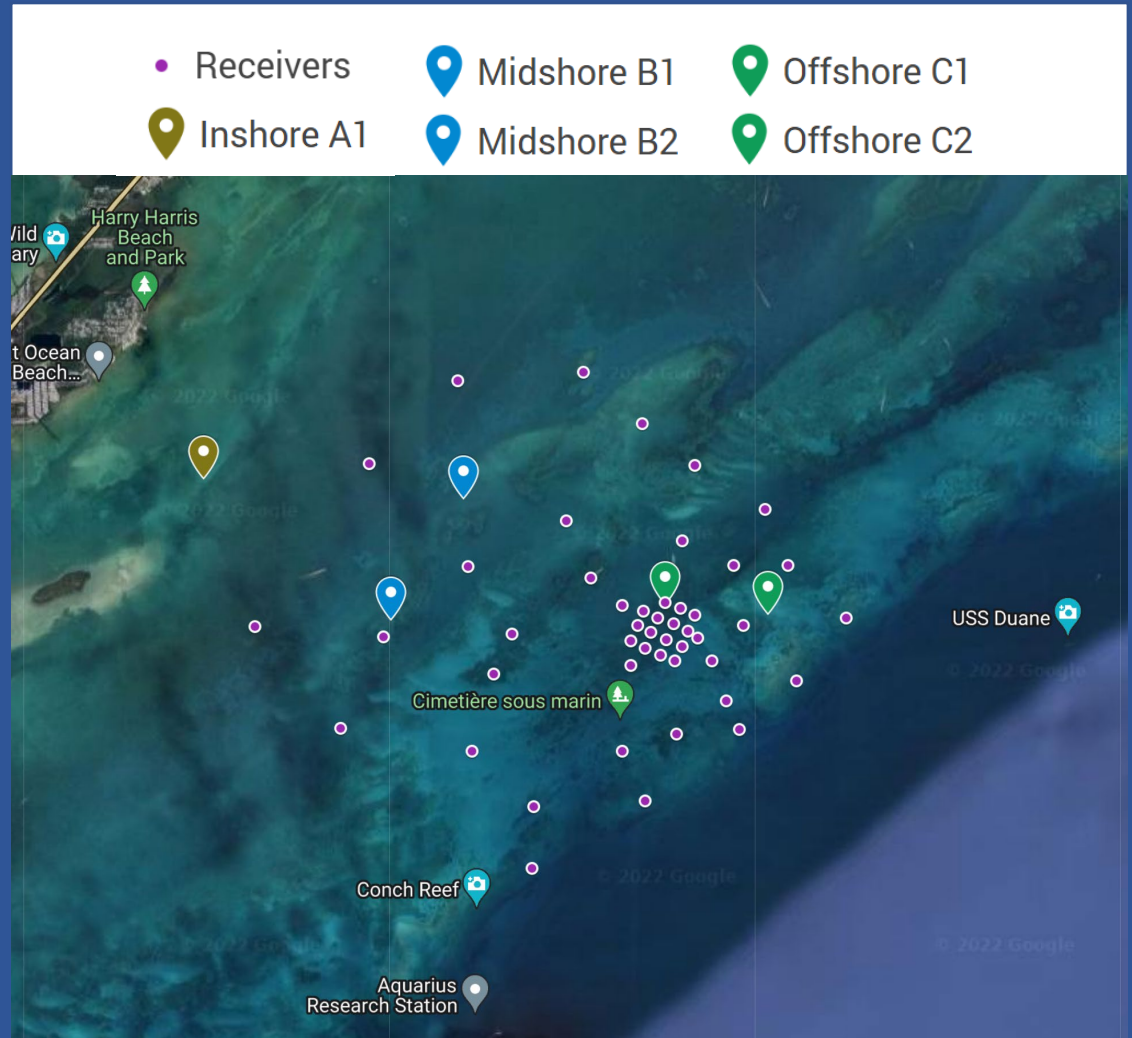
Predation risk

Habitat maps



Stable Isotope Analyses: Upper AOI

Focus on basal resources and fin clips from tagged fishes



Bioenergetic Modeling

Photo credit:
Y. Papastamatiou

Food
→

→ Waste

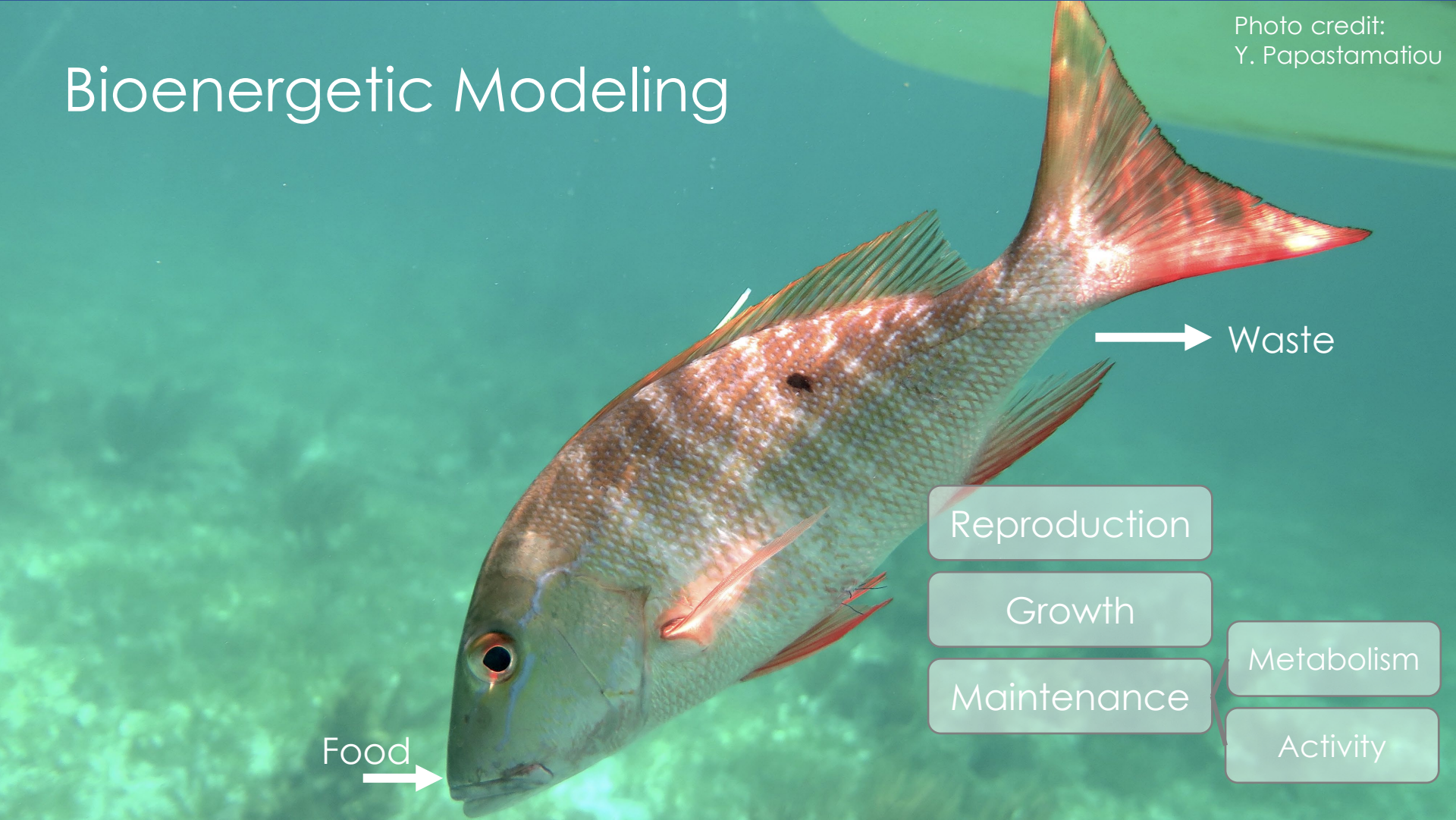
Reproduction

Growth

Maintenance

Metabolism

Activity

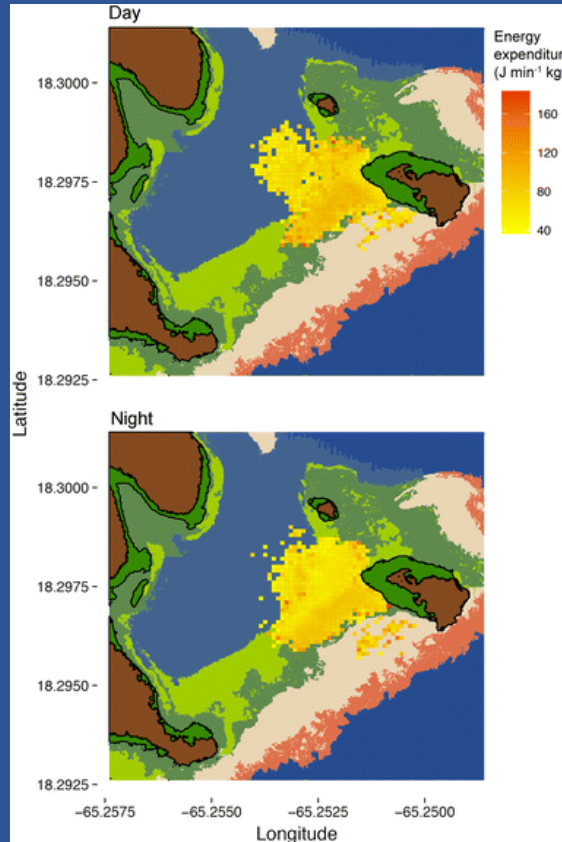


Spatiotemporal Patterns in Energy Use

Field Accelerometry

Habitat Maps

Bioenergetic Models



Future MTAG interactions

- Annual meetings (remote / hybrid?). Timing?
- Capstone workshop (2025-2026)
- Deadlines over next few years? (Rezoning etc)
- Please advise on other opportunities for engagement
- Collaboration with FWC for lobsters (other ways to lever FISHSCAPE data)
- Questions and feedback



NCCOS

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