

FISHSCAPE Management Technical Advisory Group Meeting Summary
11 December 2023
1400 - 1512

Attendants:

Last Name	First Name	Title	Organization	Email
Bruckner	Andy	Research Coordinator	NOAA - FKNMS	andy.bruckner@noaa.gov
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Serafy	Joe	Research Fishery Biologist	NOAA/NMFS/SEFSC	joe.serafy@noaa.gov
Parr	Nick	Aquatic Preserves Manager	FDEP	nicholas.parr@floridadep.gov
Wilson	Trudy	Biological Scientist	FDEP - John Pennekamp	trudy.ferraro@dep.state.fl.us
Boucek	Ross	FL Keys Initiative Manager	Bonefish & Tarpon Trust	ross@bonefishtarpontrust.org
TBD		Biscayne Bay Aquatic Preserves Manager	FDEP	
Morley	Dani	Assistant Research Scientist	FWC	danielle.morley@myfwc.com
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Malone	Margaret	Post-Doctoral Research Fellow	FIU	malonema@fiu.edu
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Moy-Huwyler	Rainer	Graduate Research Assistant	FIU	rmoyh001@fiu.edu
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Badlowski	Gina	Graduate Research Assistant	FIU	gbadl001@fiu.edu
Pabón	Paula	Graduate Research Assistant	FIU	ppabo004@fiu.edu

Meeting Minutes:

1406 – Introduction (AH)

- Project logo highlight
- Meeting agenda
- MTAG mission statement
- Project question and outputs recap:
 - How much seagrass is necessary to support reef fish foraging?

- Online management tool overview
- Current project status
 - Summer 2022:
 - Upper keys telemetry array setup
 - SIA sampling
 - BRUVs
 - Fall 2022
 - New project members onboarded
 - Upper Keys winter tagging
 - Spring 2023
 - Telemetry array moved to Middle Keys
 - Summer 2023
 - Middle Keys work done primarily from KML

No questions

1414 – Acoustic Telemetry in Upper and Middle Keys (MM)

- Upper Keys Acoustic Array Review
- Upper Keys Tagging Review
 - Great barracuda, mutton snapper, yellowtail snapper, and white grunt
 - 64% of tagged fish retained/detected in array (n = 32)
- Preliminary Results: Space Use (Large Scale Array & Fine Scale Tracks)
- Preliminary Results: Diel Activity Patterns (Upper Keys)
- Middle Keys Acoustic Array
 - 7x10 km large scale array with nested fine-scale array, in similar fashion to Upper Keys array setup
 - n = 51 fish tagged
 - Fine scale array removal in March, moving to Lower Keys in June
- Lower Keys – acoustic telemetry array deployed in summer 2024. Anticipate completing data collection by May 2025.

No questions

1422 – Predator Abundance (BRUVs) (AH)

- Work by Paula Pabon
- 74 BRUVs deployed in FKNMS (Upper & Middle Keys)
- >70 species detected, asymptotic trend indicates sampling effort is appropriate
- Preliminary results
 - Most common species: white grunt, yellowtail snapper, Yellow Jack
- Paula moving on with analysis of video recording, specifically behavioral analysis
- Summer 2024: moving to Lower Keys

No questions

1426 – Epifaunal Abundance & Seagrass Habitat Characteristics (JC)

- Work by Ada Barbanera
- Aim and objectives overview
- Methods overview

- Seagrass habitat characteristics
 - Visual surveys
 - Quadrats
 - Shoot density
 - Canopy height/cover
 - Seagrass coring
- Epifaunal / infaunal surveys
 - Drift nets
 - Seagrass coring for benthic infauna
- Progress to date (Summer 2023)
 - 45 sites surveyed
 - 23 Upper Keys
 - 22 Middle Keys
 - 450 seagrass quadrat assessments
 - 90 benthic sweeps for benthic infauna
 - 90 benthic cores for seagrass above/below biomass
- Next steps (2024)
 - 25 sites to survey in Lower Keys
 - Collect epifaunal/infaunal samples during dusk/night to account for diurnal variation in prey abundance
 - Deploy artificial structures to collect seagrass-associated epifauna passively
 - Predation assay/tethering in all 3 boxes (~18 per box)

Question (Joe Serafy): Will there be an attempt to come up with secondary production estimates? E.g. biomass per unit area per unit time to link upper and lower trophic levels?

Answer: (JC) Passive sampling efforts already planned for 2024 will be helpful in addressing this.

Answer: (AH) Approximation of productivity and foraging from adjacent project components will inform biomass density of secondary production.

Link shared in chat: Waters & Crawford 1973

<https://aslopubs.onlinelibrary.wiley.com/doi/abs/10.4319/lo.1973.18.2.0286>

1437 – Long term seagrass monitoring (JF)

- 2023 paper by Krause et al. used cluster analysis to identify 7 distinct types of benthic communities
- Diver belt transect fish surveys
 - 50x4m
 - Similar species count to BRUV survey
 - Cryptic seagrass species identified, next steps will be to begin modeling for species density/distribution

No questions

1443 – Seascape Mapping and Trophic Linkages (WRJ)

- Work by Marianna Coppola and Gina Badlowski
- Seascape mapping achievements: Ground truthing data collection in Upper & Middle Keys AOI for drone mapping

- 353 ground truthing data points collected across a diverse range of habitats
- Methods overview to create seascape maps
- Next steps for mapping:
 - use seascape maps to understand fish habitat use (with track data)
 - upscale classification model to long-term sat data
- SIA in Upper and Middle Keys
 - Sampling fin clips from all tagged fish
 - Sampling primary production
 - Upper and Middle Keys sample processing ongoing
 - Next steps will be to sample in Lower Keys
- Next steps in SIA
 - Sample in lower Keys
 - Utilize Bayesian Mixing Models

Comment (Jim Fourqurean): We have stable isotope samples from seagrass since 1995

Question (Joe S): Does Sargassum have a distinct SI signature?

Answer (WRJ): Yes, and we do have samples of that which we will analyze to characterize this signature.

1450 – Fish Physiology and Bioenergetic Modeling (YP)

- Work by Rainer Moy-Huwyler and Margaret Malone
- Bioenergetic modeling / Energy budget overview
 - Most variable components are maintenance/metabolism
 - SMR and RMR are most crucial to measure in the wild to estimate consumption rates
- Goals overview
 - Measure SMR of 3 species
 - Relationship between MR and activity/swim speed
 - Relationship between MR and temperature
- Methods overview
 - Flume respirometer
 - Acceleration transmitter tags
- Respiration vs Activity for grunts and yellowtail snapper
 - Positive relationship for both species,
 - Specific fit TBD
- Next steps:
 - Barracuda
 - Determine effect of temperature
 - Generate equations relating swim activity, body size, and temperature to metabolic rate
 - Use this to estimate FMR

Question (Joe S): Have you considered swimming acoustically-tagged (or transmitter-equipped) vs naked individuals?

Answer (YP & RMH): Yes we already have, preliminary analysis has indicated no significant difference between tagged vs untagged white grunts.

1500 – (AH)

- 2024 Plans in Lower Keys
 - Move sampling efforts to Lower Keys
 - Continue flume respirometry
 - Continue SIA
- Collaborations
 - Will Weid – Fish waste nutrient excretion during activity
 - Matthew Marrero – Human activity influence
 - TFEL – Status of *S. barracuda* in FKNMS
 - Paula Pabon – Stomach content analysis
 - Food web modeling
 - Presentations & Outreach highlight
- Future MTAG interactions
 - 2024 annual meeting
 - In-person capstone workshop (2025 – 2026)
 - Deadlines?
 - Advice for outreach?
 - Questions?

Comment (Trudy Wilson): Seagrass management could play into lobster trapping management project in Pennekamp State Park with broader impacts across fish populations as well.

Question (Joe Serafy): Are there any linkages between this project and mangrove habitats?

Answer (AH): Not explicitly, but the data from this project will indirectly feed into that linkage.

Link in chat – Shideler et al. 2017

<https://esajournals.onlinelibrary.wiley.com/doi/full/10.1002/ecs2.1943>

1512 – Meeting Ended