

# Extensive SAV Data Collection of South Florida Beach Project Points to Value of Maintained Database for Longterm Analysis

**Presenter: Sandy Walters, RES Florida Coastal Group Lead**

With special thanks to—

LG2 Senior Scientist and Project Manager Mark Howell

RES legacy SWC dive/technical team Randy Corbin, Natalie Bryce and Lauren Zitzman

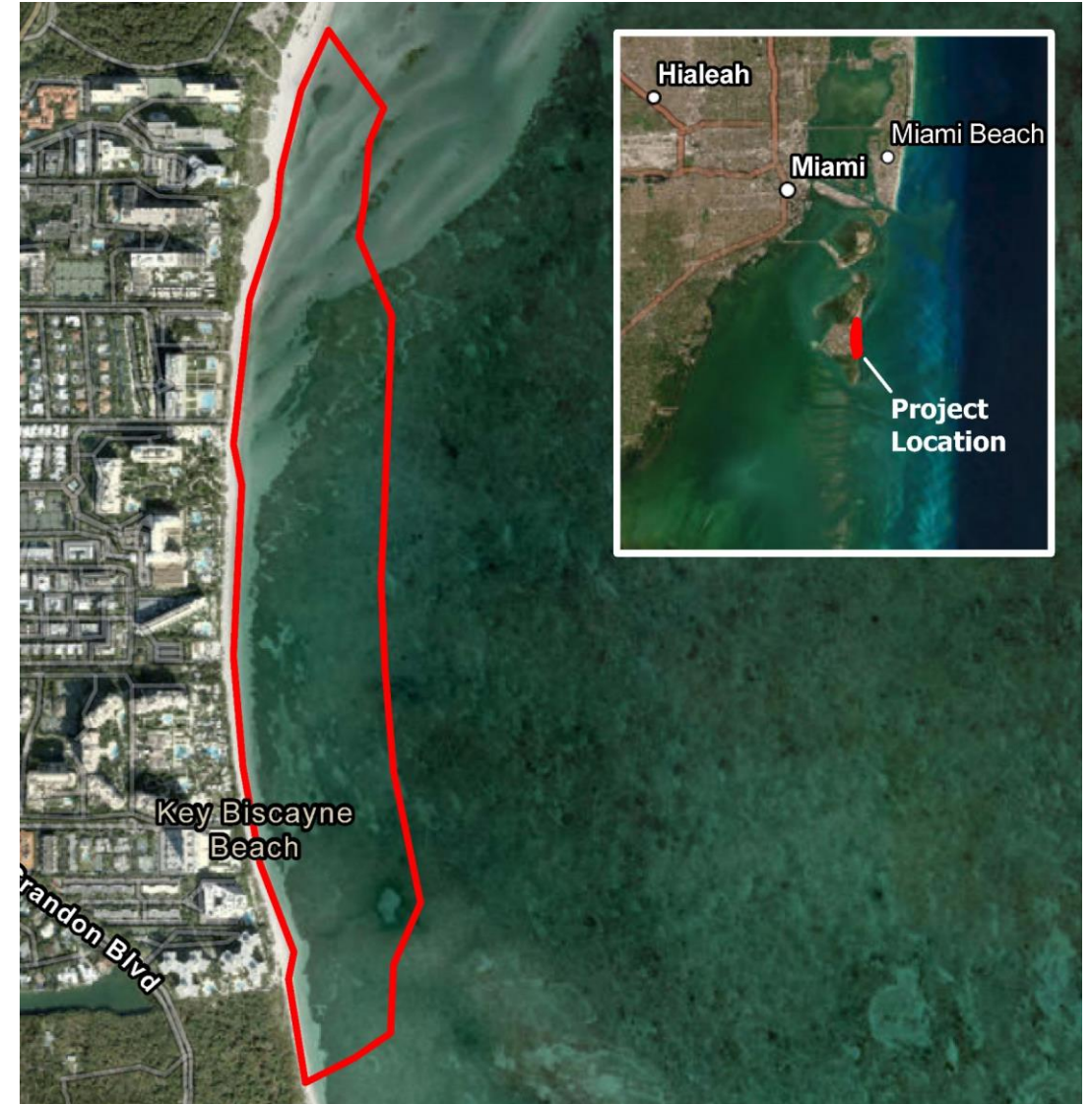
---

FSBPA Annual Tech Conference, February 1-3, 2023, Fort Myers, FL



# EXAMPLE PROJECT: Key Biscayne USACE SAV Study

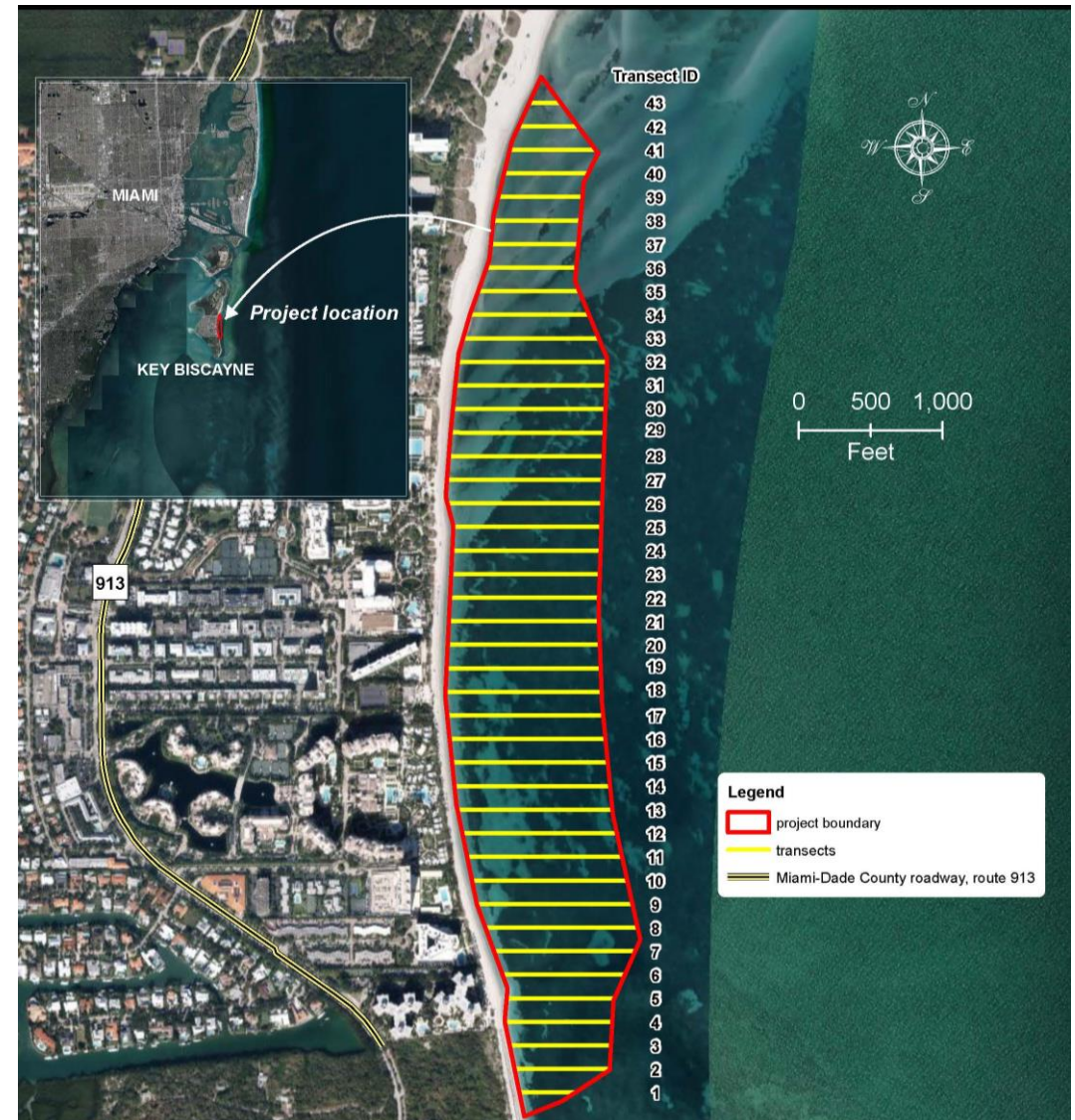
- Part of Miami-Dade CSRSM Feasibility Study
- Required by SARBO as then-listed Johnson's seagrass was located near beach nourishment and offshore breakwaters planned for erosion control
- 145-acre project boundary
- Field work completed on June 22, 2021
- Two phases
  - Preliminary visual reconnaissance—first week of June, reviewed enough of project area to inform detailed survey design
  - Detailed SAV surveys and reports



# EXAMPLE PROJECT: Key Biscayne USACE SAV Study

## Scope of project

- Lines established at 50 m intervals creating 43 transects with ends defined by buoys
- Team of two divers laid out transect from start at shoreline, navigating by compass to end with occasional surfacing to confirm track, then started taking data from end toward start
- Second team of two divers collected data from start toward endpoint, with two teams completing one transect when meeting
- Qualitative and quantitative data collected
- Divers took data every 5 m with 1 m<sup>2</sup> quadrats divided into 100 sub-units, and photos



# EXAMPLE PROJECT: Key Biscayne USACE SAV Study

- **Data collected**

- Total seagrass density (Braun Blanquet)
- Percent cover by species
- Three density short shoot counts for each species in each Braun-Blanquet category
- Macroalgae density
- Seagrass health
- Substrate conditions
- Epiphytic coverage
- Marine fauna
- Other notable conditions/observations



Quadrat showing dense Turtlegrass in Transect 1



Small Rose coral colony in Transect 10

# EXAMPLE PROJECT: Key Biscayne USACE SAV Study

## Basic Dive Data Taken

1											Dive Time						PSI			
2	Date	Transect Number	Start	End	Total Bottom Time	Weather	Visi- bility	Current Speed	Current Direction	Dive Team	Start	End	Max Depth (ft)	Length of Transect (m)						
3	6/5/2021	1	9:25	10:57	1:32	partly cloudy	20	mild	NW	LZ	3000	1500	9	125						
4	6/5/2021	1	9:25	10:57	1:32	partly cloudy	20	mild	NW	NB	3000	1200	9	125						
5	6/5/2021	2	10:16	12:38	2:22	partly cloudy	20	mild	NW	RC	3100	500	7	185						
6	6/5/2021	2	10:16	12:38	2:22	partly cloudy	20	mild	NW	JC	3000	600	7	185						
7	6/5/2021	2	12:45	13:49	1:04	partly cloudy	20	mild	NW	RC	3100	1600	7	185						
8	6/5/2021	2	12:45	13:49	1:04	partly cloudy	20	mild	NW	JC	3200	1700	7	185						
9	6/5/2021	3	11:34	12:01	0:27	partly cloudy	20	mild	NW	NB	1200	500	8	220						
10	6/5/2021	3	11:34	12:01	0:27	partly cloudy	20	mild	NW	LZ	1500	500	8	220						
11	6/5/2021	4	14:19	16:23	2:04	partly cloudy	20	mild	NW	JC	1700	500	7	225						
12	6/5/2021	4	14:19	15:48	1:29	partly cloudy	20	mild	NW	RC	1600	500	7	225						
13	6/5/2021	4	14:51	16:23	1:32	partly cloudy	20	mild	NW	LZ	2000	500	7	225						
14	6/5/2021	4	14:51	15:48	0:57	partly cloudy	20	mild	NW	NB	1000	500	7	225						
15	6/6/2021	5	13:01	15:40	2:39	partly cloudy	10	mild	NW	LZ	3200	500	8	210						
16	6/6/2021	5	13:01	15:40	2:39	partly cloudy	10	mild	NW	NB	3100	500	8	210						
17	6/6/2021	6	13:10	15:12	2:02	partly cloudy	10	mild	NW	JC	3200	550	8	255						
18	6/6/2021	6	13:10	15:12	2:02	partly cloudy	10	mild	NW	RC	2900	600	8	255						
19	6/6/2021	6	15:58	16:25	0:27	partly cloudy	10	mild	NW	JC	3200	2100	8	255						
20	6/6/2021	6	15:58	16:25	0:27	partly cloudy	10	mild	NW	RC	3100	2000	8	255						
21	6/7/2021	6	9:29	10:44	1:15	partly cloudy	< 10	mild	NW	NB	3300	1800	12	255						
22	6/7/2021	6	9:29	10:44	1:15	partly cloudy	< 10	mild	NW	LZ	3000	2000	12	255						



Above: Team preparing for work. Below: Natalie rewinding 300 m transect tape.



# EXAMPLE PROJECT: Key Biscayne USACE SAV Study

## Seagrass Short Shoot Counts

Species	Transect Number	Distance along Transect (m)	Abundance level	Number of Shoots
S.f.	2	20	Medium	0
H.w.	5	0	Medium	23
S.f.	6	0	Medium	0
T.t.	8	50	Medium-high	5
S.f.	7	95	Medium-high	89
T.t.	8	305	Medium	9
S.f.	8	110	Low	0
T.t.	8	120	Medium	12
H.w.	8	135	Low	0
S.f.	11	105	High	0
S.f.	11	110	Low	2
S.f.	12	50	Low	6
S.f.	12	55	Medium	0
H.w.	12	65	Low	12

Species	Transect Number	Distance along Transect (m)	Abundance level	Number of Shoots
S.f.	12	305	Low	3
H.w.	12	305	Low	24
H.w.	38	40	Medium-high	19
H.w.	40	135	Medium-high	7
H.w.	40	140	Medium-high	0
H.w.	42	105	Low	0
T.t.	36	165	Medium-high	6
T.t.	23	25	Low	2
S.f.	23	25	High	6
T.t.	23	30	Low	6
S.f.	23	30	Medium-high	0
T.t.	23	60	Low	5
T.t.	23	260	Low	1
T.t.	13	210	High	4
T.t.	14	240	High	9
S.f.	15	20	Medium-high	12
T.t.	15	265	Medium	18
S.f.	15	310	Medium-high	3
T.t.	24	240	Medium	4
S.f.	31	120	High	3

# EXAMPLE PROJECT: Key Biscayne USACE SAV Study

## Frequency of Occurrence, Mean Seagrass Density, and Mean Seagrass Abundance by Transect

Transect Number	Frequency of Occurrence	Density		Abundance	
		Mean (%)	Standard Deviation (%)	Mean (%)	Standard Deviation (%)
1	19/26	61.27	39.78	83.84	14.15
2	34/38	58.58	27.44	65.47	19.47
3	42/45	83.33	22.96	89.29	4.63
4	40/46	72.72	29.81	83.63	9.47
5	41/43	79.67	22.57	83.56	14.21
6	52/52	71.15	13.85	71.15	13.85
7	54/60	51.33	23.47	57.04	16.78
8	61/65	59.00	21.22	62.87	15.26
9	59/64	56.41	26.93	61.19	22.13
10	63/63	48.83	21.94	48.83	21.94
11	58/63	51.29	24.73	55.71	20.36
12	62/62	42.11	22.60	42.11	22.60
13	61/66	36.79	24.39	39.80	22.85
14	63/67	45.93	20.32	48.84	17.17
15	63/67	44.93	21.02	47.78	18.22
16	65/67	47.01	16.58	48.46	14.57
17	63/67	45.16	22.38	48.03	19.83
18	56/67	40.75	26.15	48.75	20.58
19	60/66	47.73	21.72	52.50	16.27
20	58/65	41.71	20.86	46.74	15.79

Transect Number	Frequency of Occurrence	Density		Abundance	
		Mean (%)	Standard Deviation (%)	Mean (%)	Standard Deviation (%)
21	59/64	43.16	20.60	46.81	16.93
22	55/64	41.83	22.37	48.67	15.63
23	58/64	45.20	23.01	49.88	18.65
24	56/63	42.81	23.89	48.16	19.52
25	60/63	43.49	21.58	45.67	19.71
26	51/66	32.77	27.10	42.41	23.19
27	51/67	34.30	26.11	45.06	20.13
28	54/66	43.86	29.00	53.61	22.34
29	55/66	40.82	27.64	48.98	22.63
30	47/65	34.06	29.46	47.11	24.08
31	47/65	41.09	29.46	56.83	17.14
32	49/64	39.75	30.62	51.92	24.20
33	42/58	38.34	29.43	52.95	20.28
34	2/51	0.12	0.71	3.00	2.83
35	1/43	0.23	1.52	10.00	0.00
36	8/39	9.41	21.33	45.88	23.64
37	5/38	1.37	5.28	10.40	11.84
38	14/37	13.08	24.30	34.57	28.91
39	14/35	10.23	16.20	25.57	16.23
40	7/38	8.18	18.20	44.43	12.80
41	1/37	0.03	0.16	1.00	0.00
42	3/26	0.27	1.00	2.33	2.31
43	0/14	0.00	0.00	0.00	0.00

# EXAMPLE PROJECT: Key Biscayne USACE SAV Study

## Summary Statistics for Project Area

	Density		Abundance	
Frequency of Occurrence	Mean (%)	Standard Deviation (%)	Mean (%)	Standard Deviation (%)
1,813/2,352	40.75	29.71	52.86	22.47

Frequency of Occurrence: Number of quadrats with SAV/total number of quadrats

Density: Average cover in all quadrats (with and without SAV)

Abundance: Average cover in quadrats (with SAV)



Randy conducting seagrass short shoot count



# EXAMPLE PROJECT: Key Biscayne USACE SAV Study

## Braun-Blanquet Cover-Abundance Scores

Score	Coverage
0	not present
0.1	solitary specimen
0.5	few with small cover
1.0	numerous but less than 5% cover
2.0	5% to 25% cover
3.0	25% to 50% cover
4.0	50% to 75% cover
5.0	75% to 100% cover



Lauren taking Braun Blanquet data



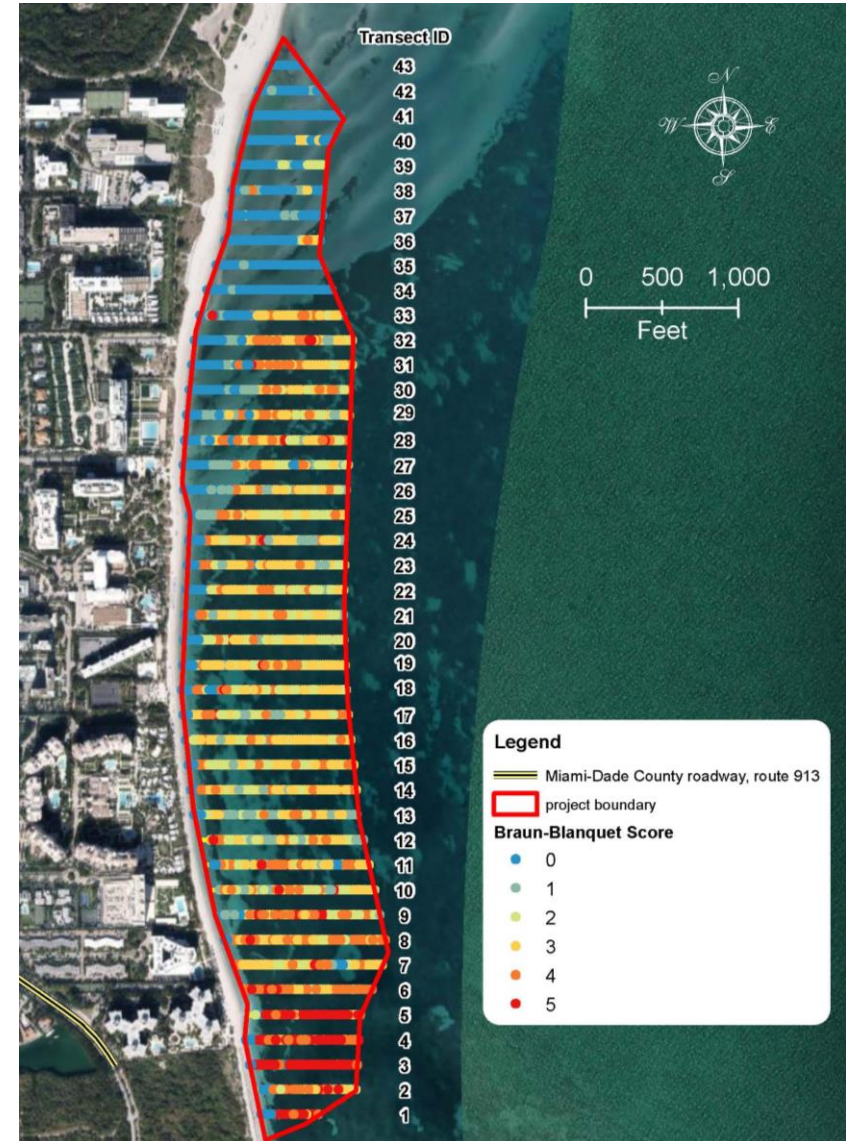
Natalie assessing seagrass bed health and composition

# EXAMPLE PROJECT: Key Biscayne USACE SAV Study

## Total seagrass coverage along transects

### Braun-Blanquet Score

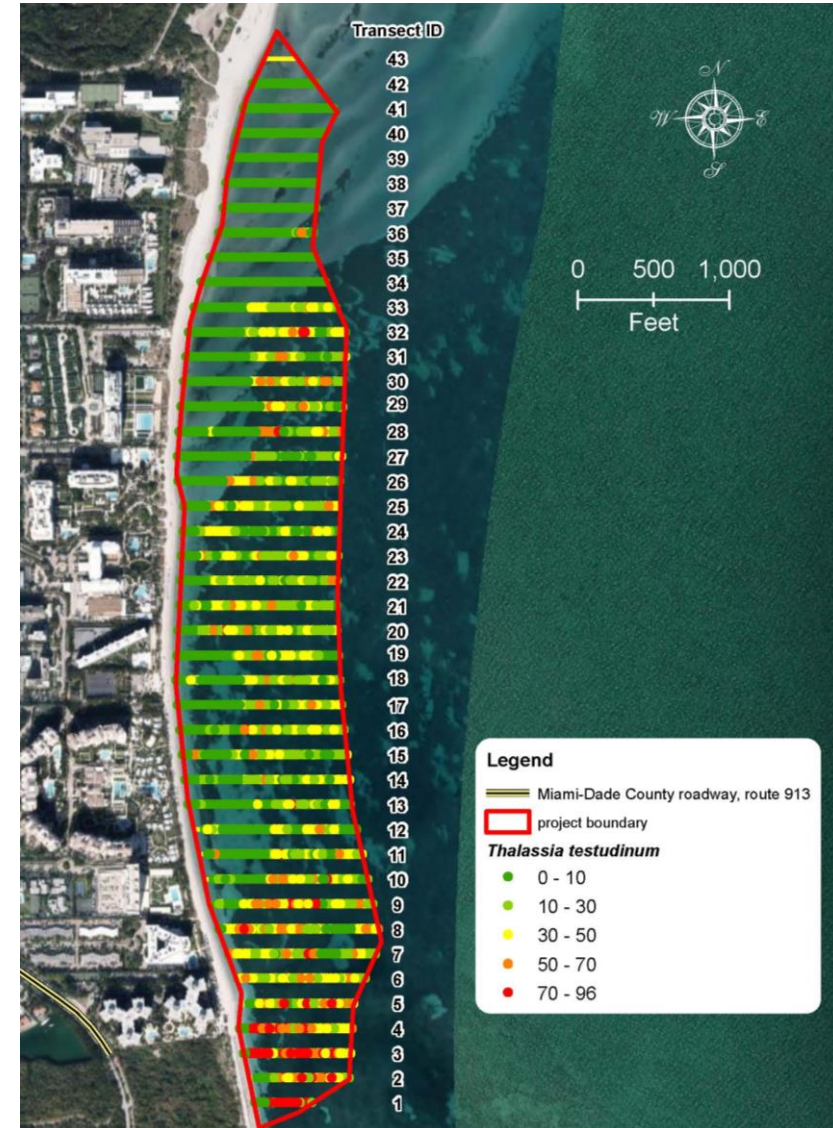
- 0
- 1
- 2
- 3
- 4
- 5



# EXAMPLE PROJECT: Key Biscayne USACE SAV Study

## Turtlegrass density and distribution along transects

### Braun-Blanquet Score

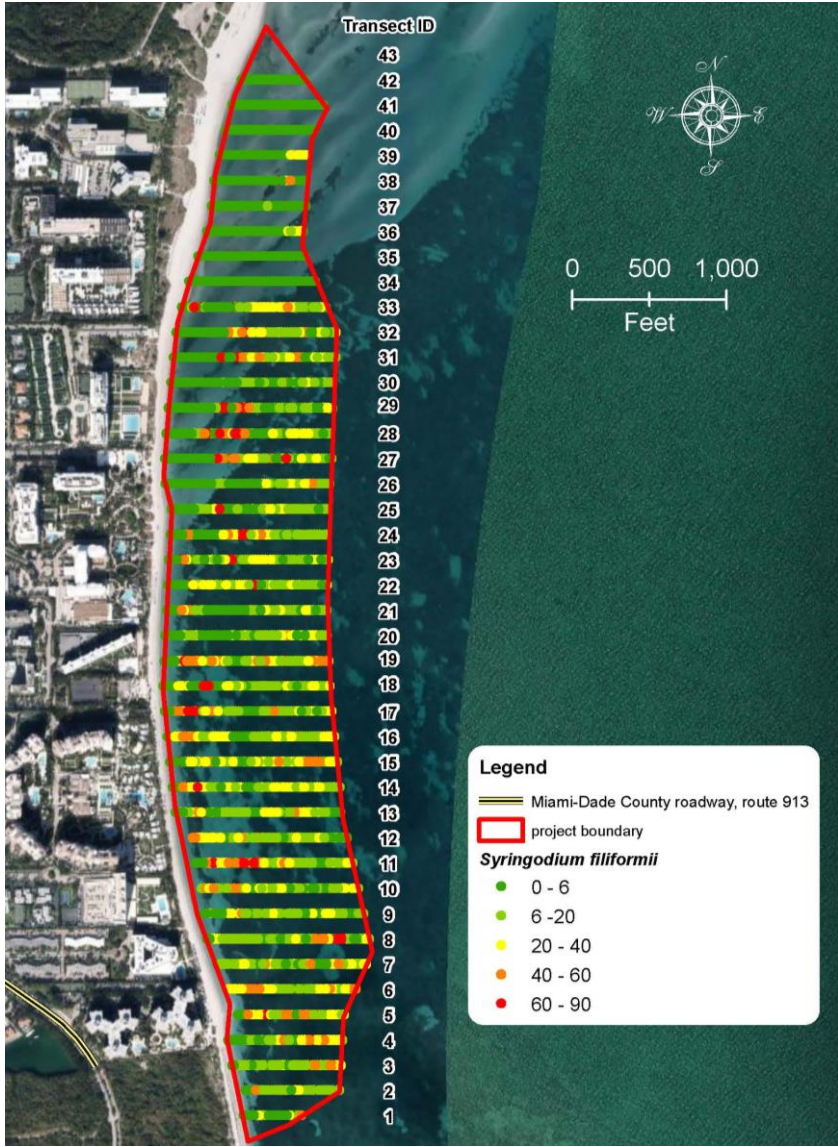


# EXAMPLE PROJECT: Key Biscayne USACE SAV Study

## Manatee grass density and distribution along transects

### Braun-Blanquet Score

- 0
- 1
- 2
- 3
- 4
- 5

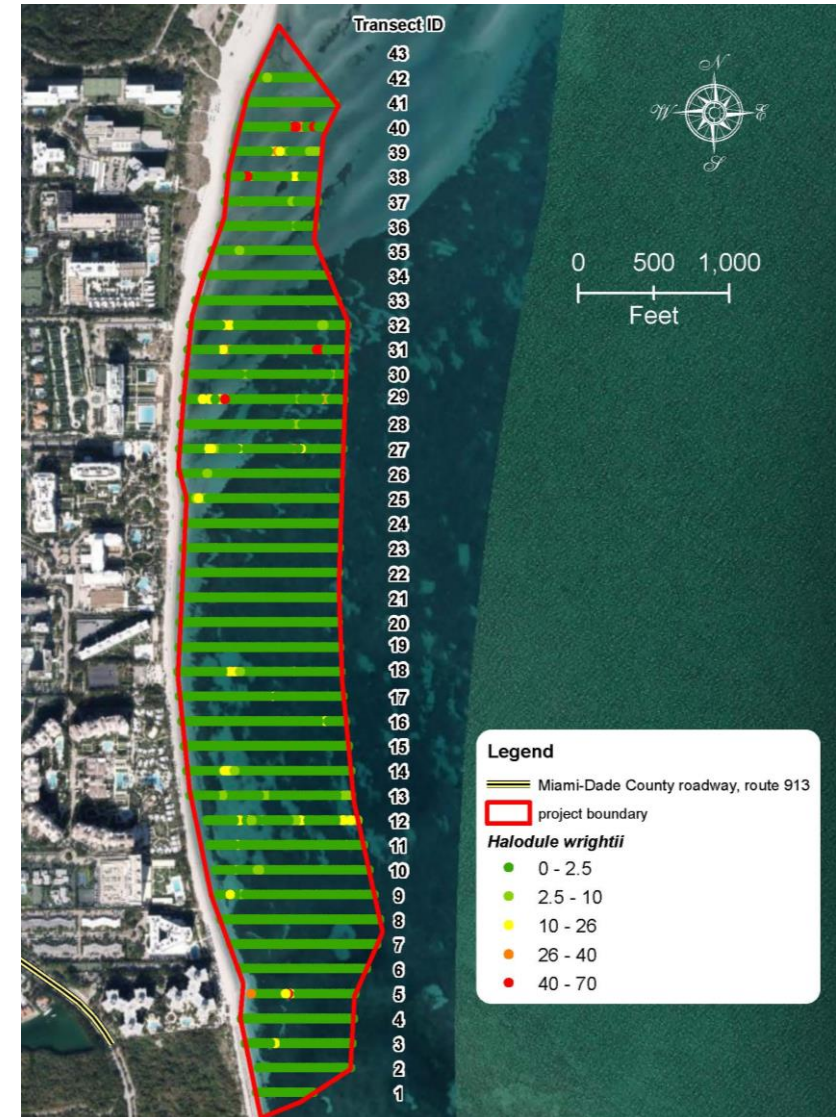


# EXAMPLE PROJECT: Key Biscayne USACE SAV Study

## Shoalgrass density and distribution along transects

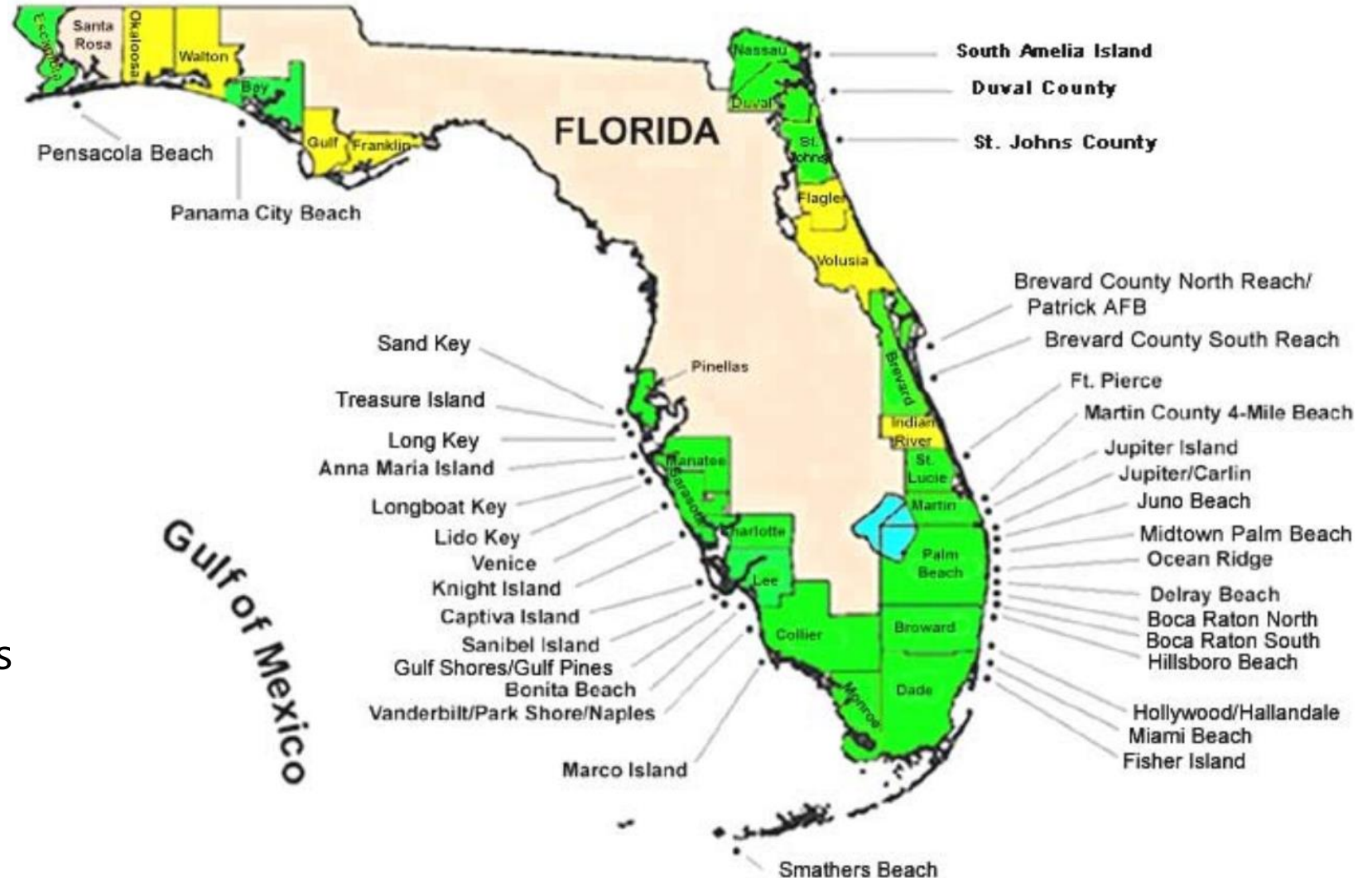
### Braun-Blanquet Score

- 0
- 1
- 2
- 3
- 4
- 5



# Beaches along Florida coast where this data could be compiled

- Figure from 1990s publication showing Florida beaches subject to renourishment
- Today would be more
- Maintenance of this data, collected with comparable methodology on regular basis, could allow cumulative and comparative studies to greatly further our understanding of Florida open shoreline seagrass resources and habitats



# Full Smiles and Empty Tanks After Completing 145 Acres of Surveys!

