

SEACAR SAV Analysis

Last compiled on 18 June, 2025

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Important Notes

The purpose of this script is to provide a report summary of SAV analysis. The script used for analysis is SEACAR_SAV_BB_script_website.R.

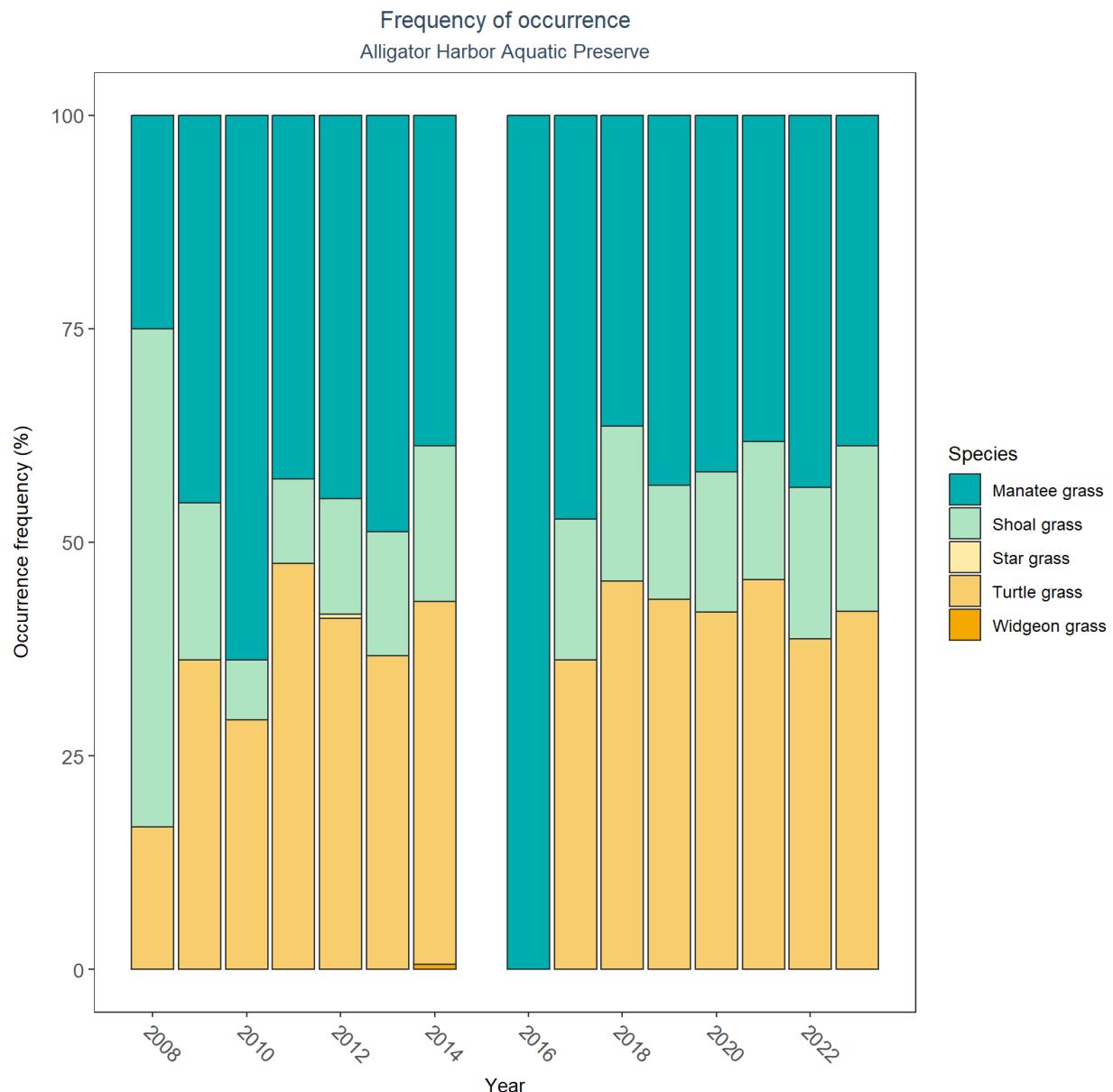
All scripts and outputs can be found on the SEACAR GitHub repository:

https://github.com/FloridaSEACAR/SEACAR_Trend_Analyses

This script is based off of code originally written by Stephen Durham with comments by Marcus W. Beck. Modified by Tyler Hill.

The file being used for the analysis is: **All_SAV_Parameters-2025-Mar-06.txt**

Alligator Harbor Aquatic Preserve



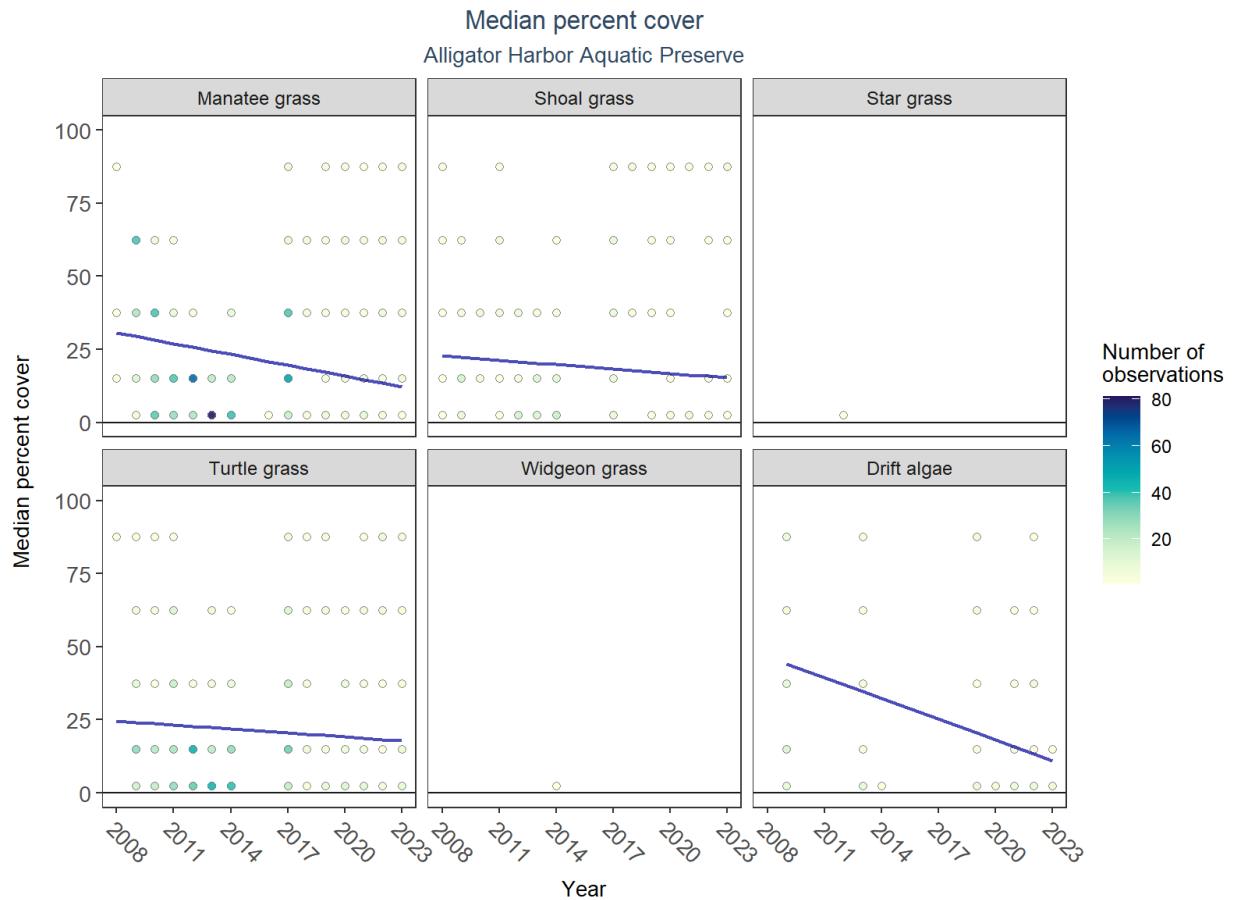
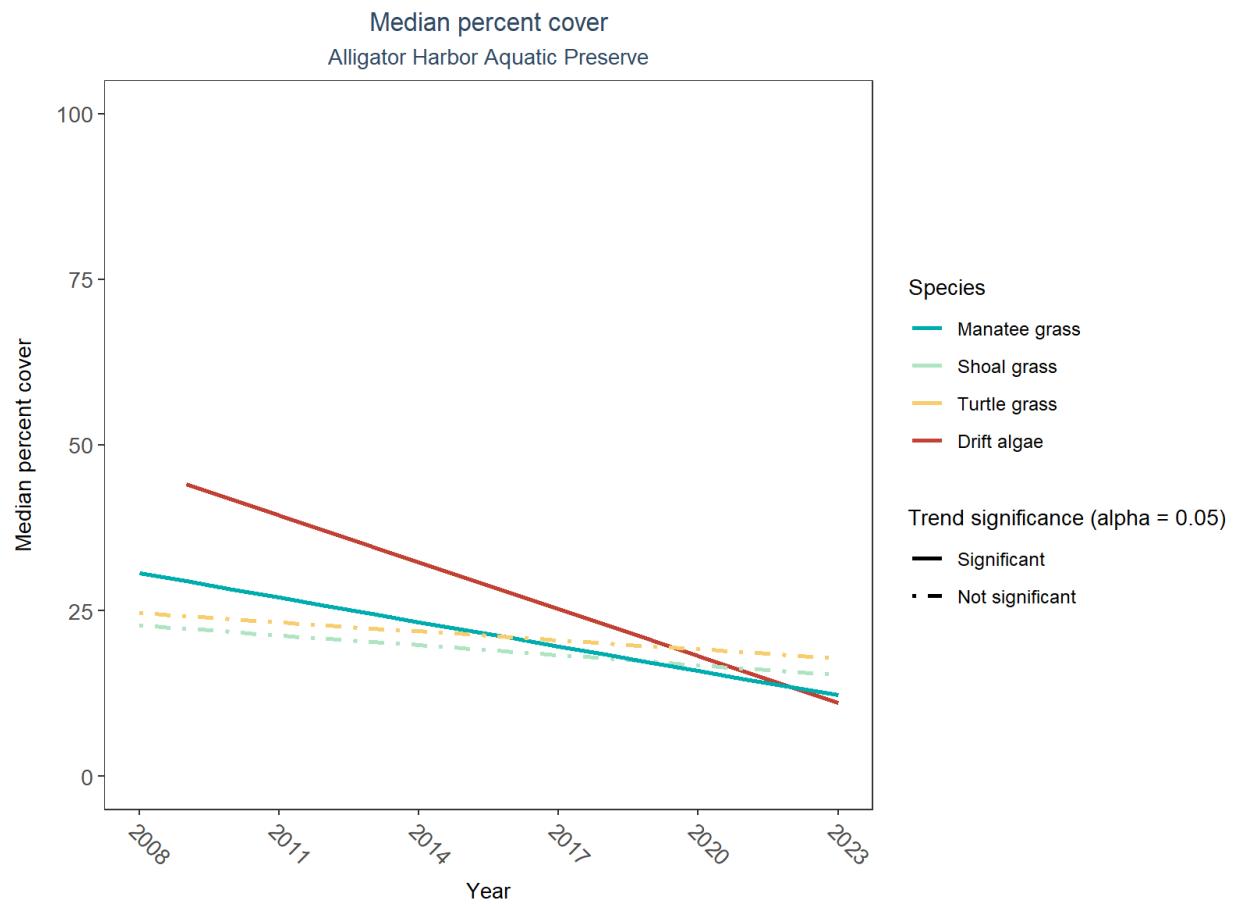
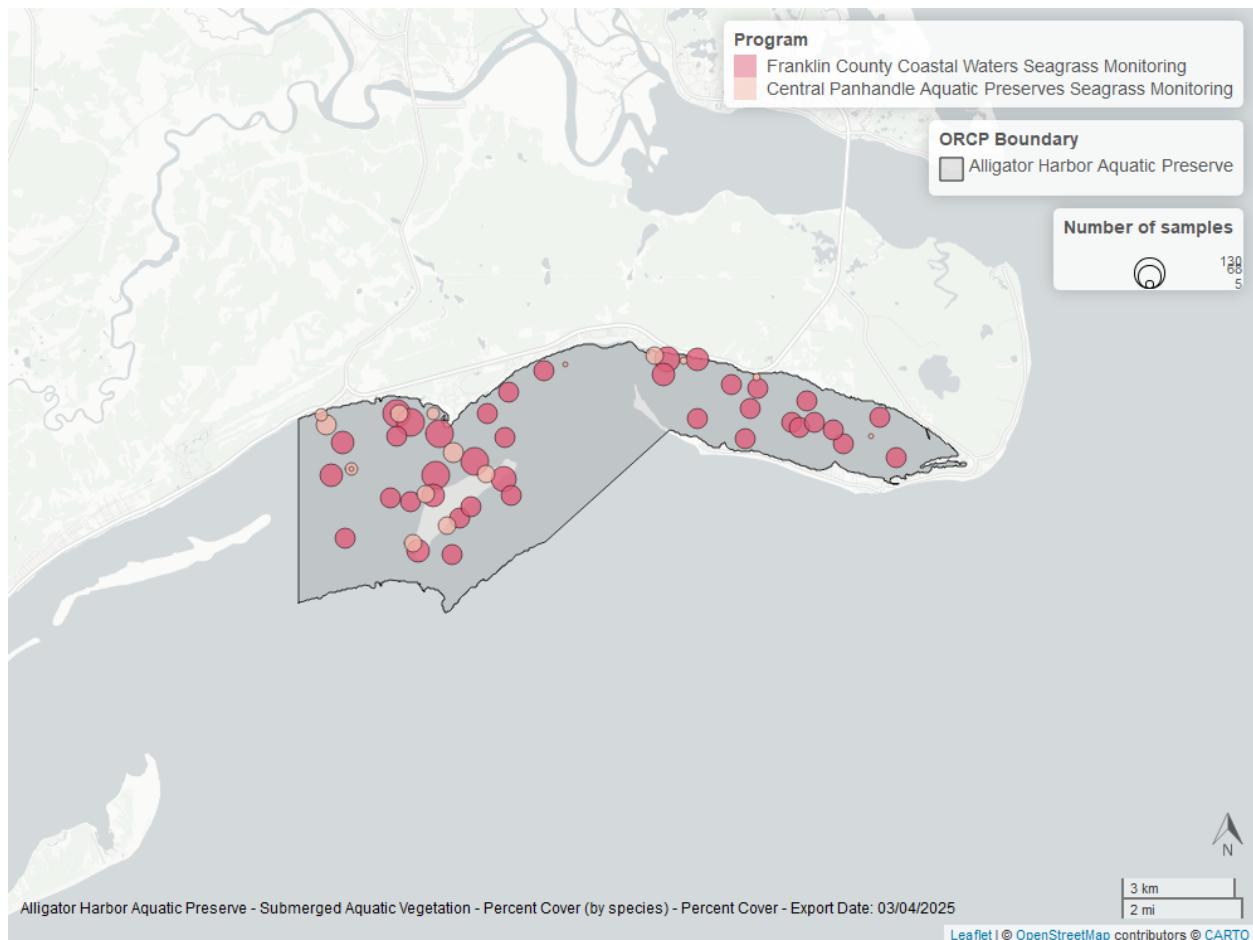


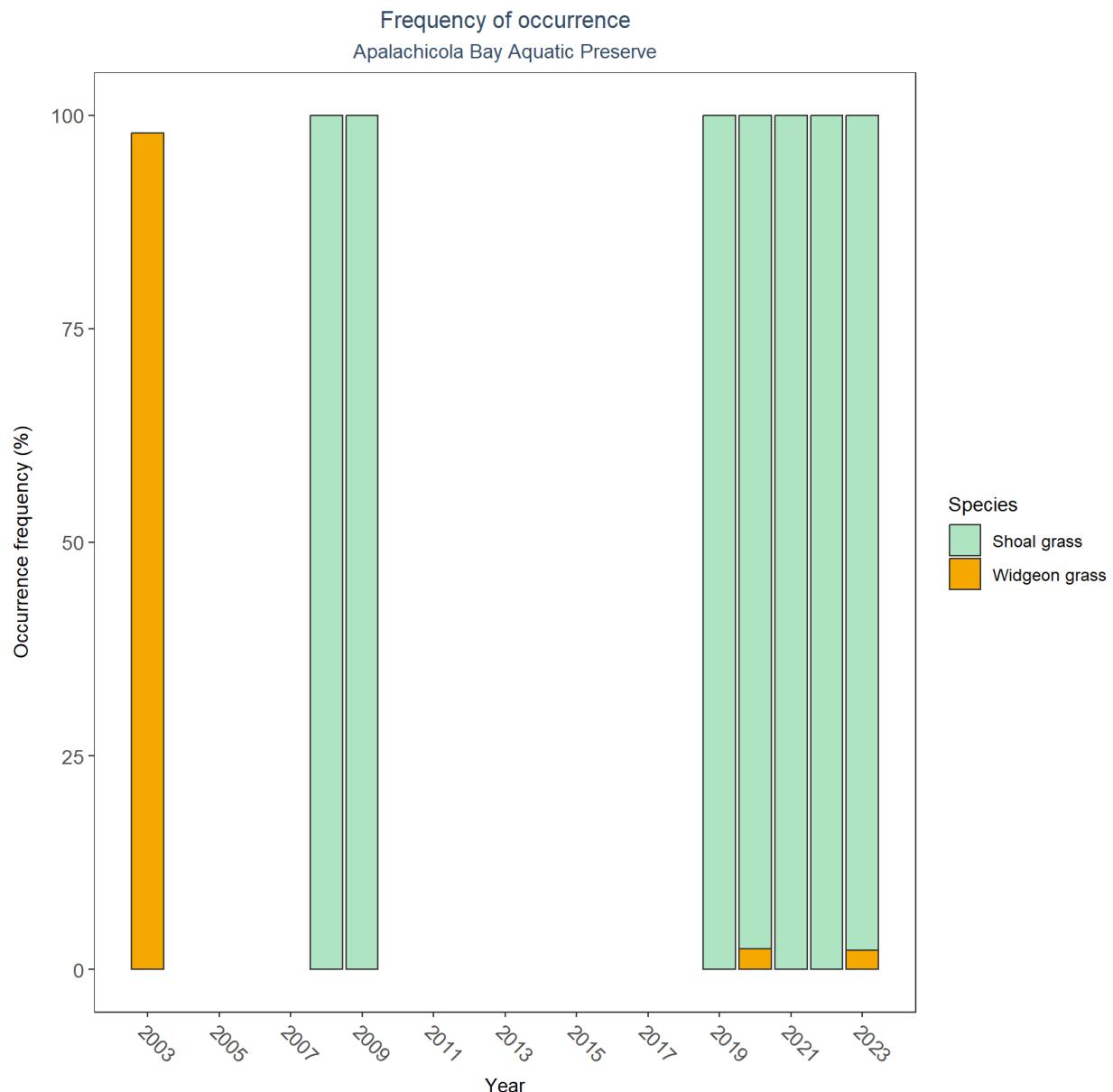
Table 1: SAV LME Results for Alligator Harbor Aquatic Preserve

Species	Statistical Trend	Period of Record	LME Intercept	LME Slope	p
Drift algae	Significantly decreasing trend	2009 - 2023	79.40	-2.36	0.03
Shoal grass	No significant trend	2008 - 2023	29.79	-0.50	0.47
Star grass	Insufficient data to calculate trend	-	-	-	-
No grass in quadrat	Model did not fit the available data	-	-	-	-
Widgeon grass	Insufficient data to calculate trend	-	-	-	-
Manatee grass	Significantly decreasing trend	2008 - 2023	47.86	-1.23	0.03
Turtle grass	No significant trend	2008 - 2023	30.97	-0.45	0.38





Apalachicola Bay Aquatic Preserve



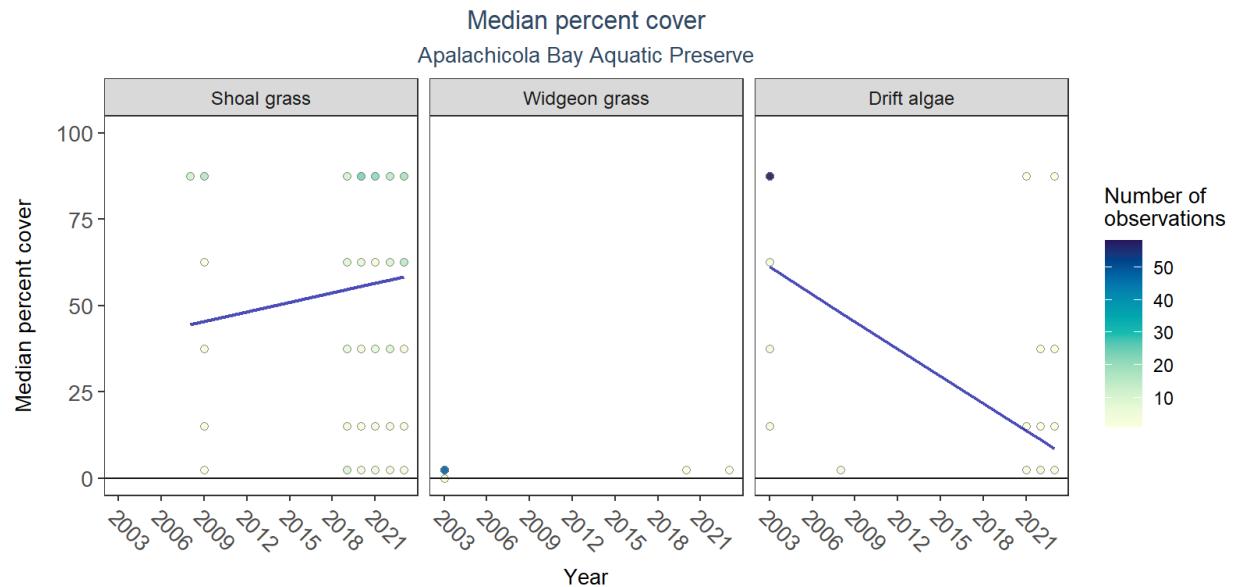
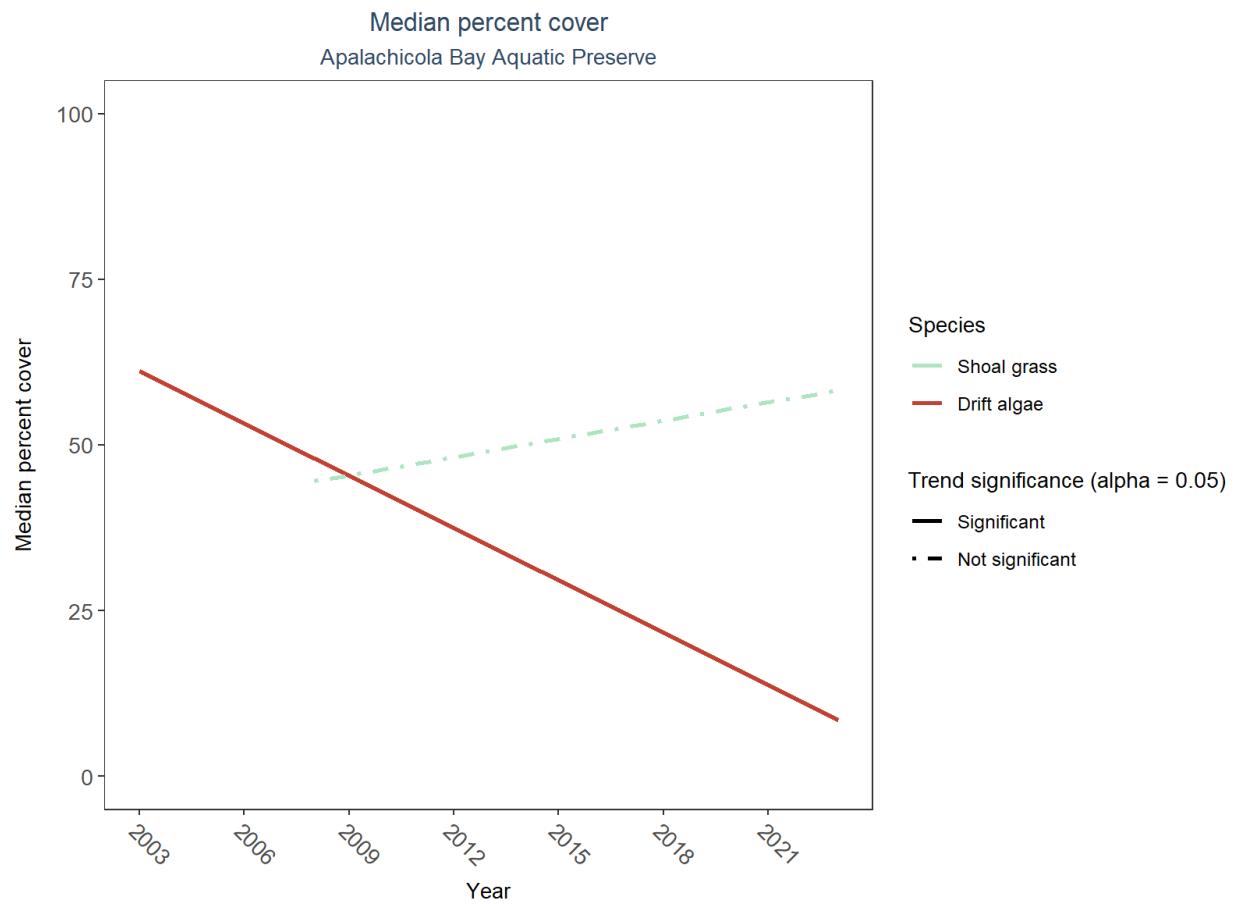
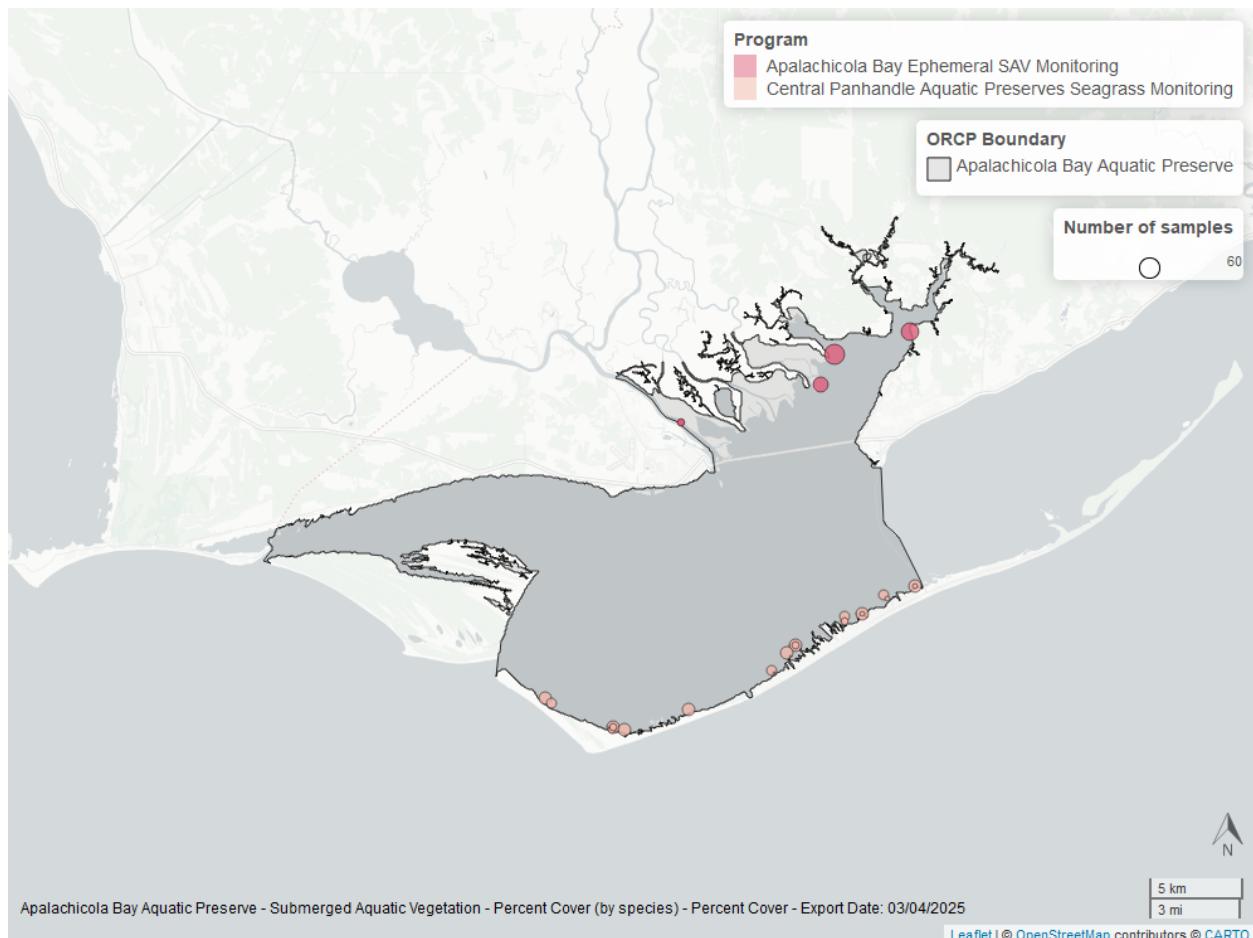


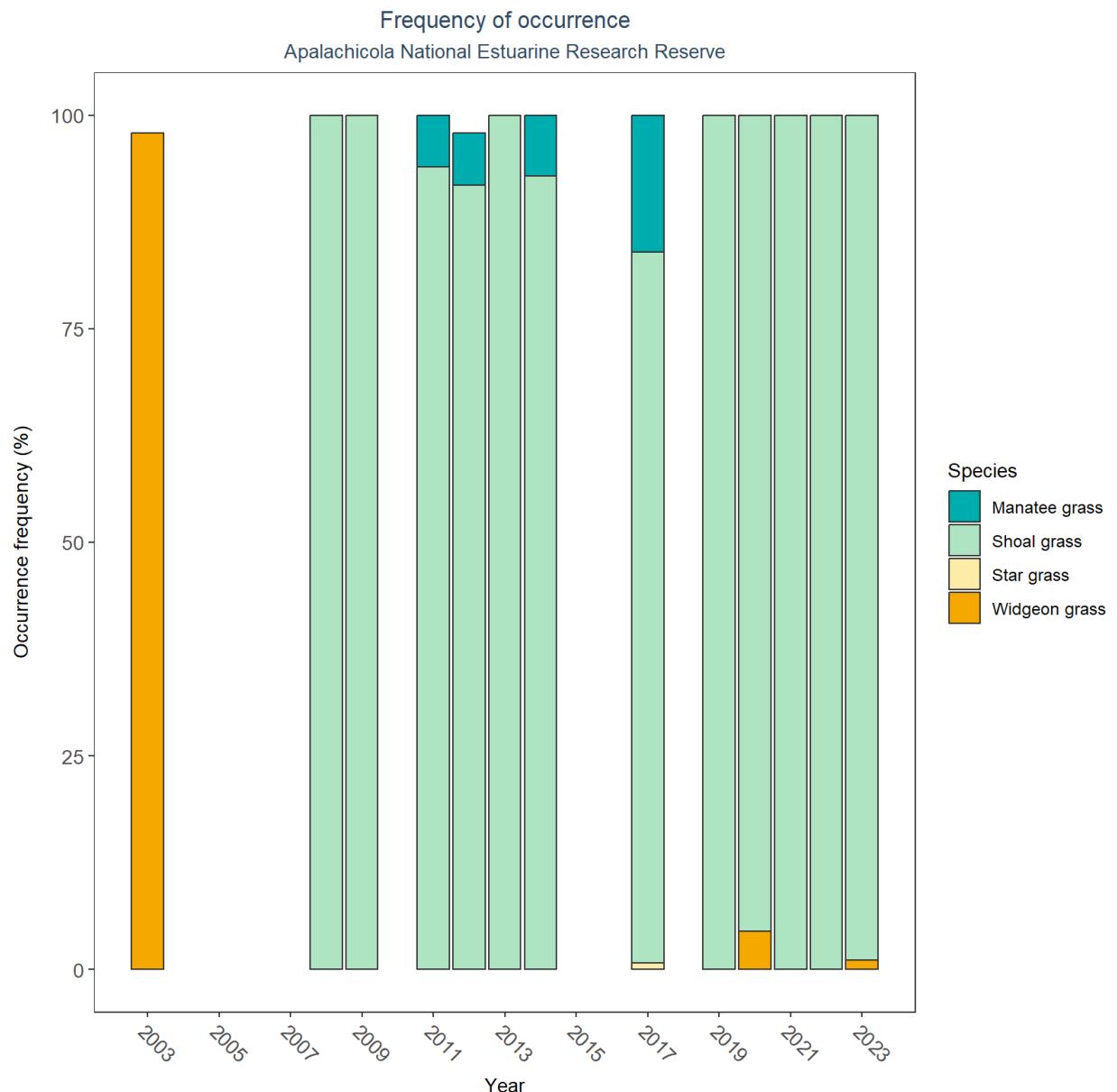
Table 2: SAV LME Results for Apalachicola Bay Aquatic Preserve

Species	Statistical Trend	Period of Record	LME Intercept	LME Slope	p
Drift algae	Significantly decreasing trend	2003 - 2023	84.82	-2.63	0.00
Shoal grass	No significant trend	2008 - 2023	31.69	0.92	0.49
No grass in quadrat	Model did not fit the available data	-	-	-	-
Widgeon grass	Insufficient data to calculate trend	-	-	-	-





Apalachicola National Estuarine Research Reserve



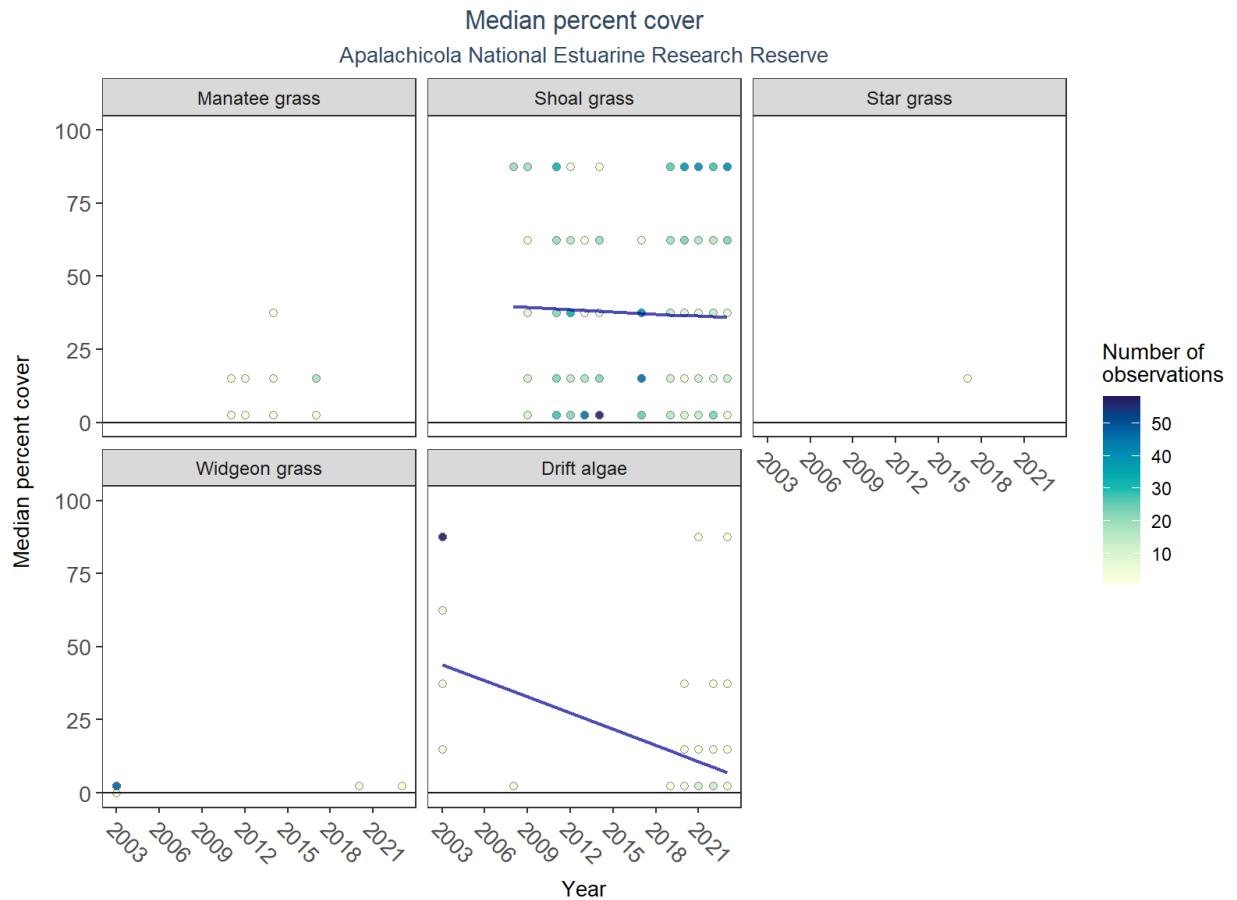
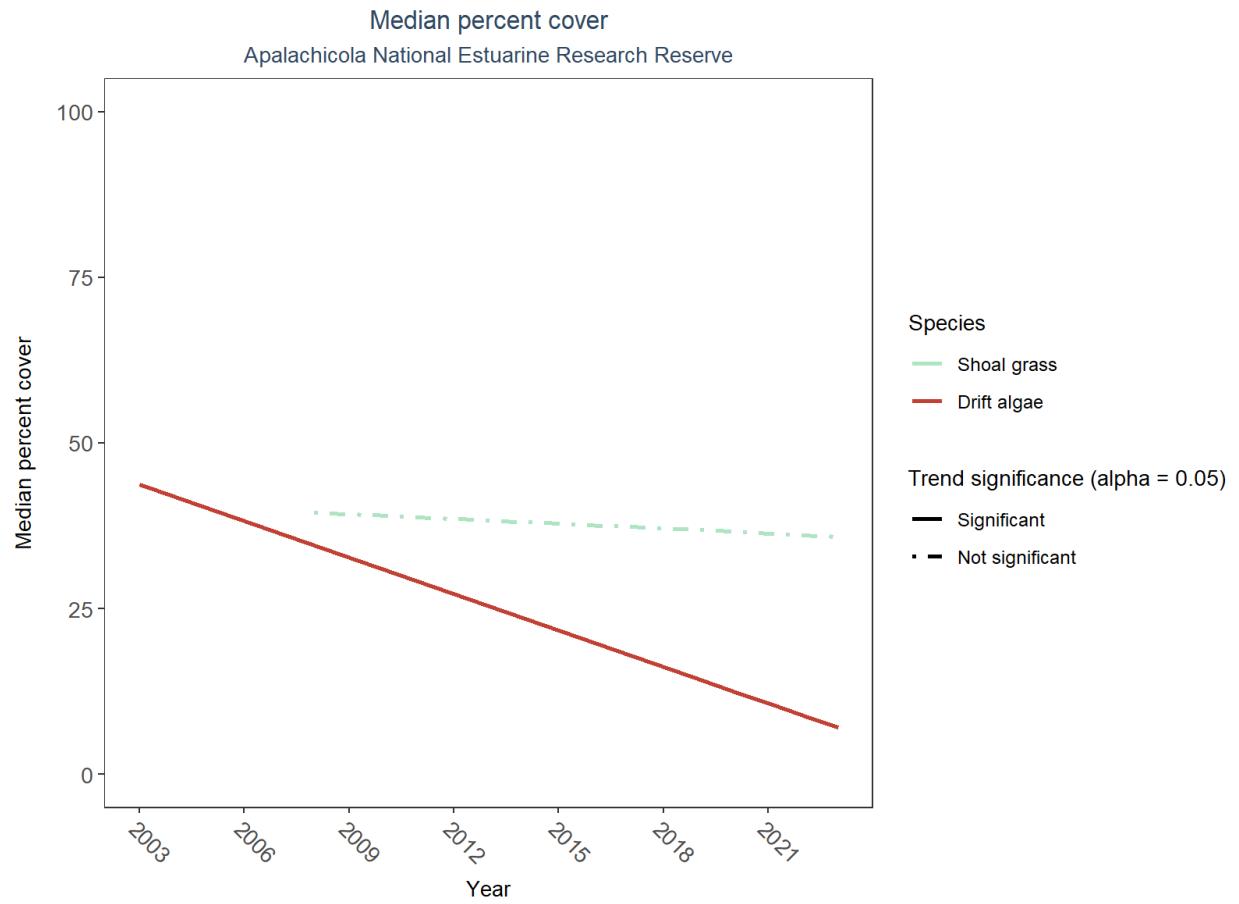
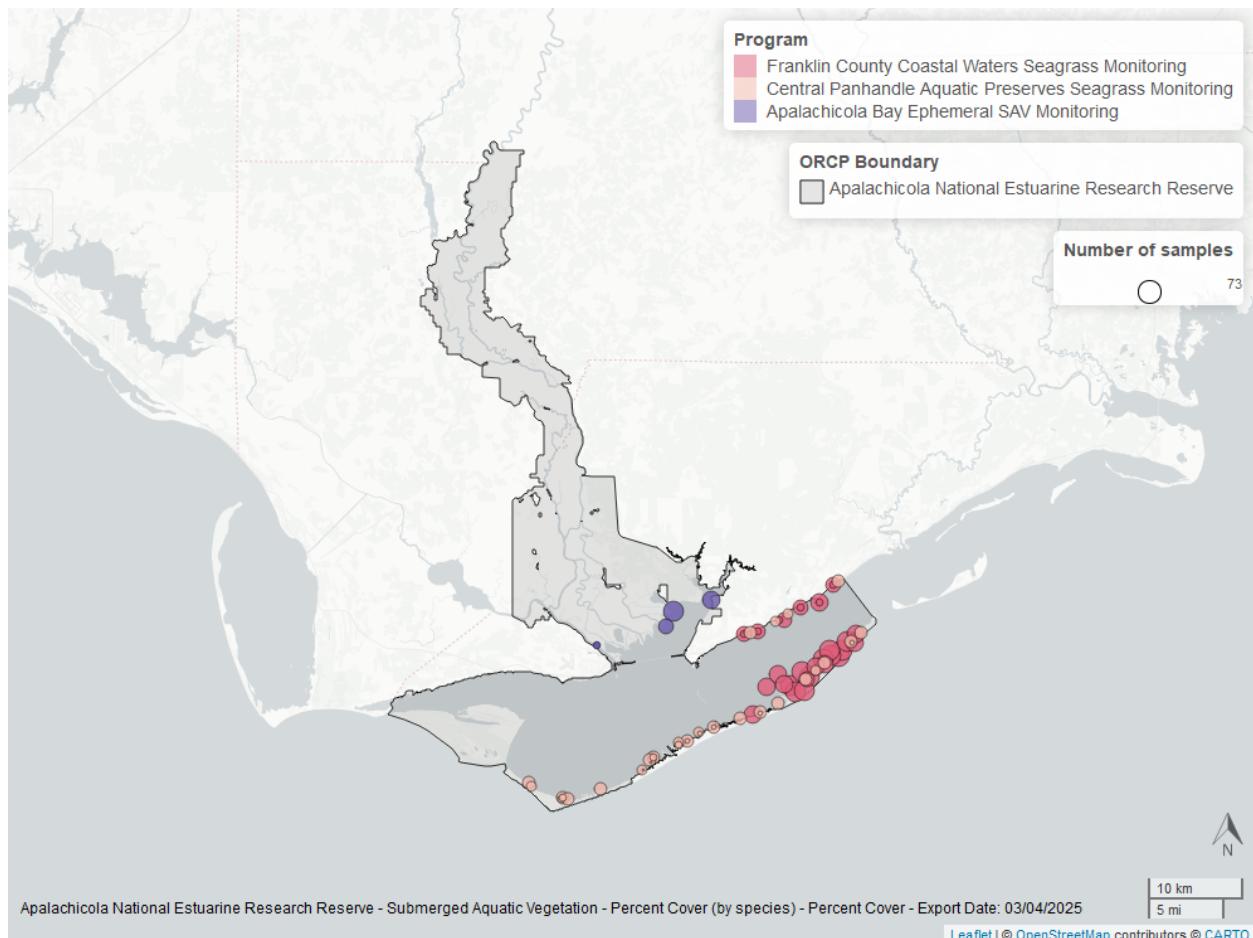


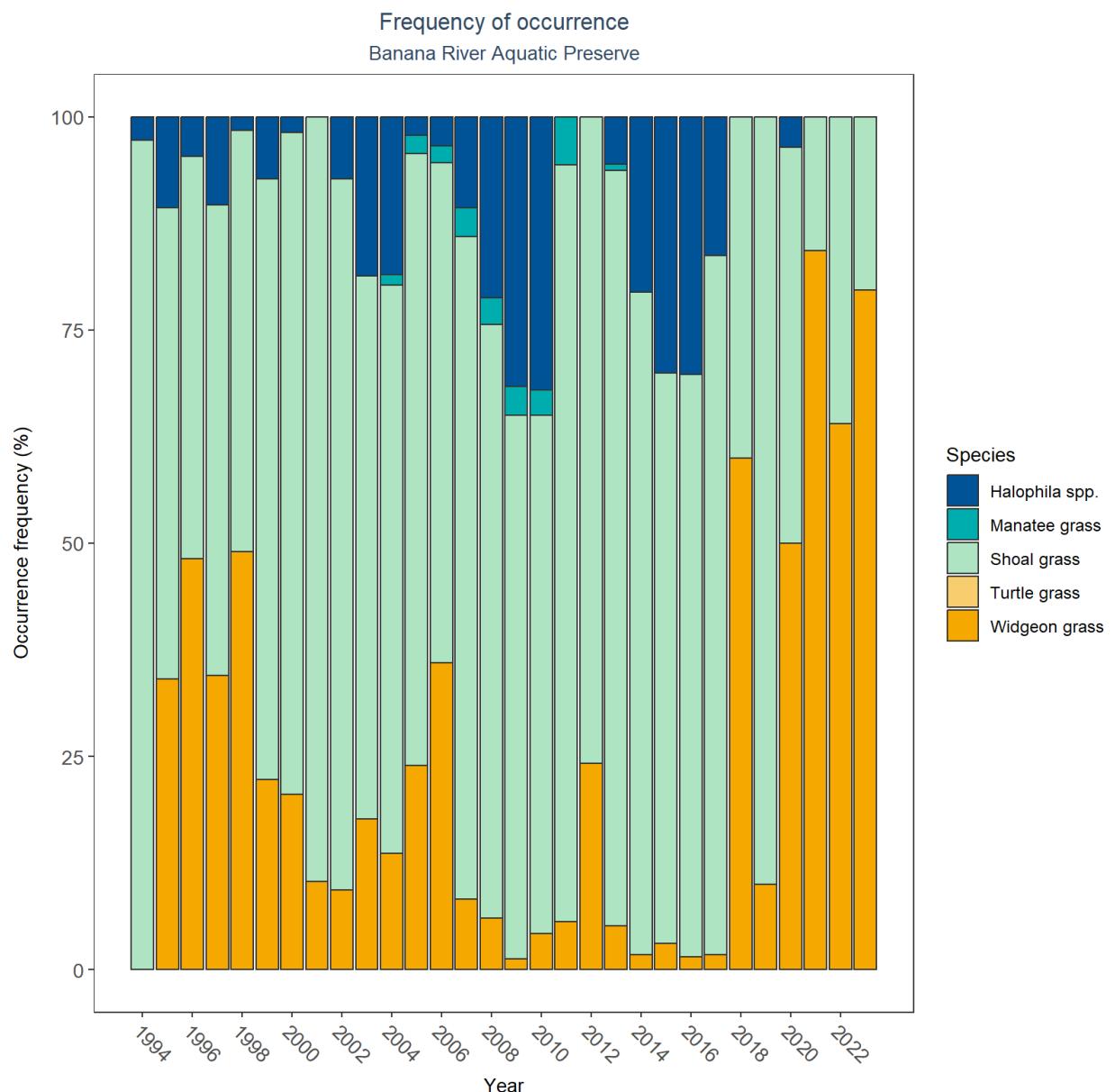
Table 3: SAV LME Results for Apalachicola National Estuarine Research Reserve

Species	Statistical Trend	Period of Record	LME Intercept	LME Slope	p
Drift algae	Significantly decreasing trend	2003 - 2023	60.31	-1.84	0.03
Shoal grass	No significant trend	2008 - 2023	42.98	-0.24	0.73
Star grass	Insufficient data to calculate trend	-	-	-	-
No grass in quadrat	Model did not fit the available data	-	-	-	-
Widgeon grass	Insufficient data to calculate trend	-	-	-	-
Manatee grass	Insufficient data to calculate trend	-	-	-	-





Banana River Aquatic Preserve



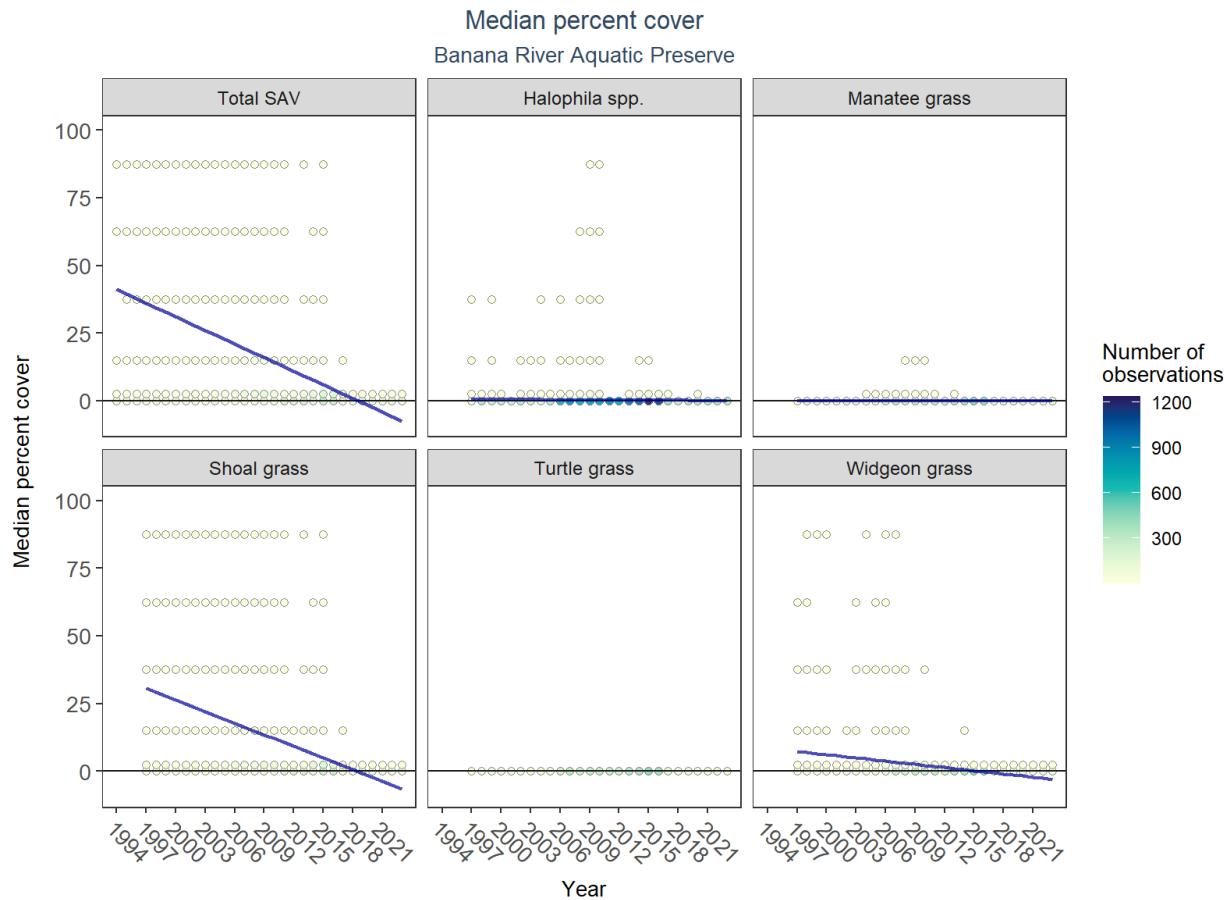
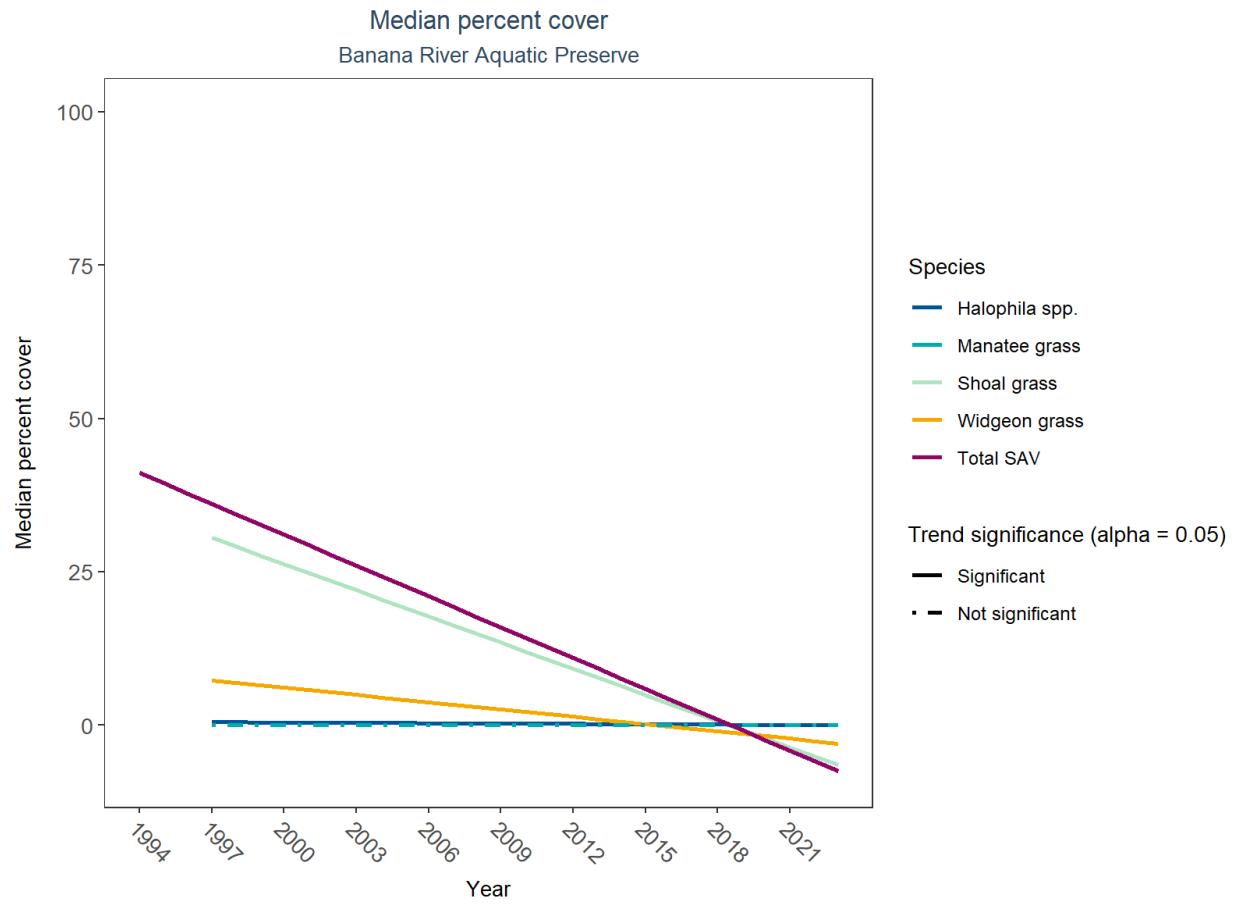
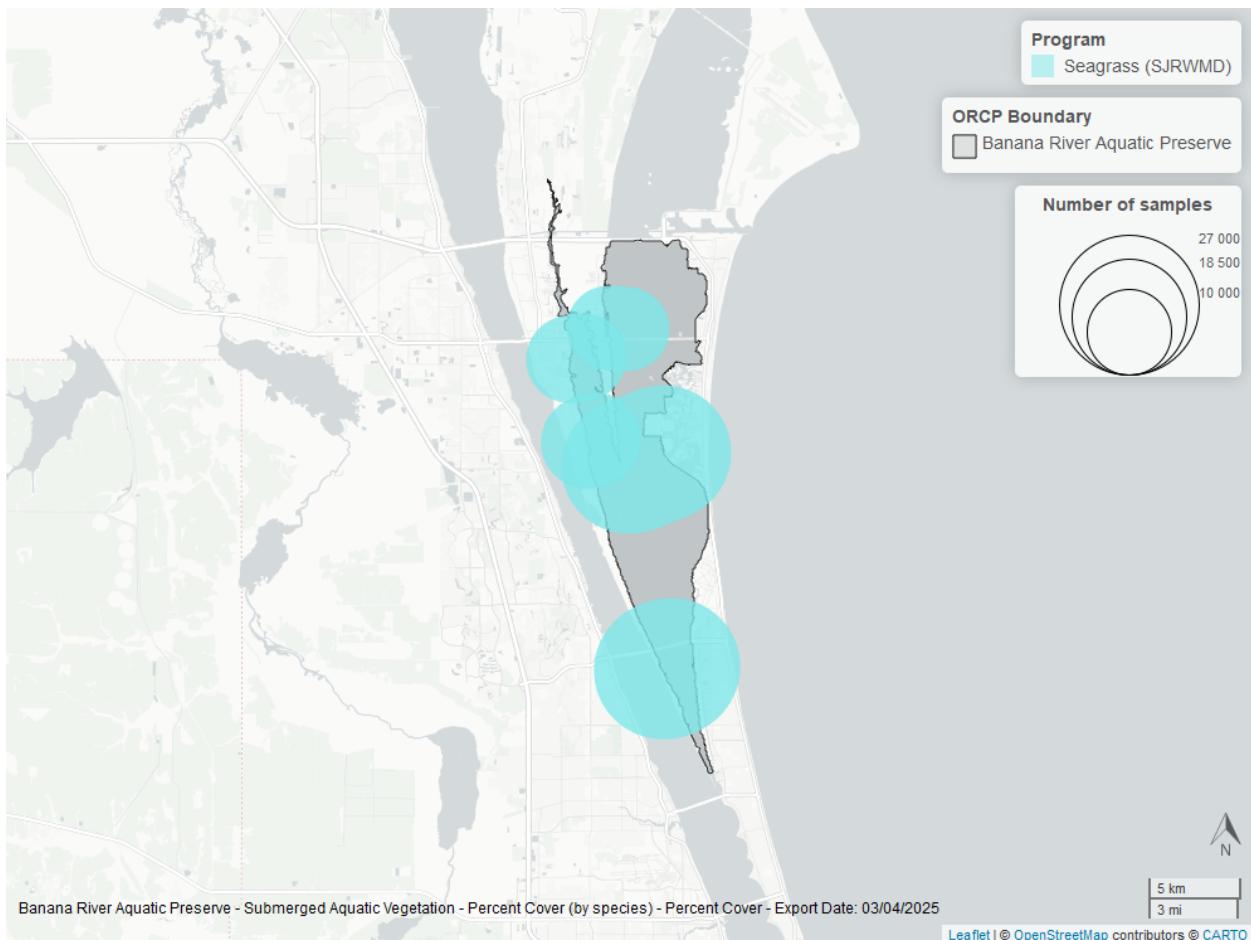


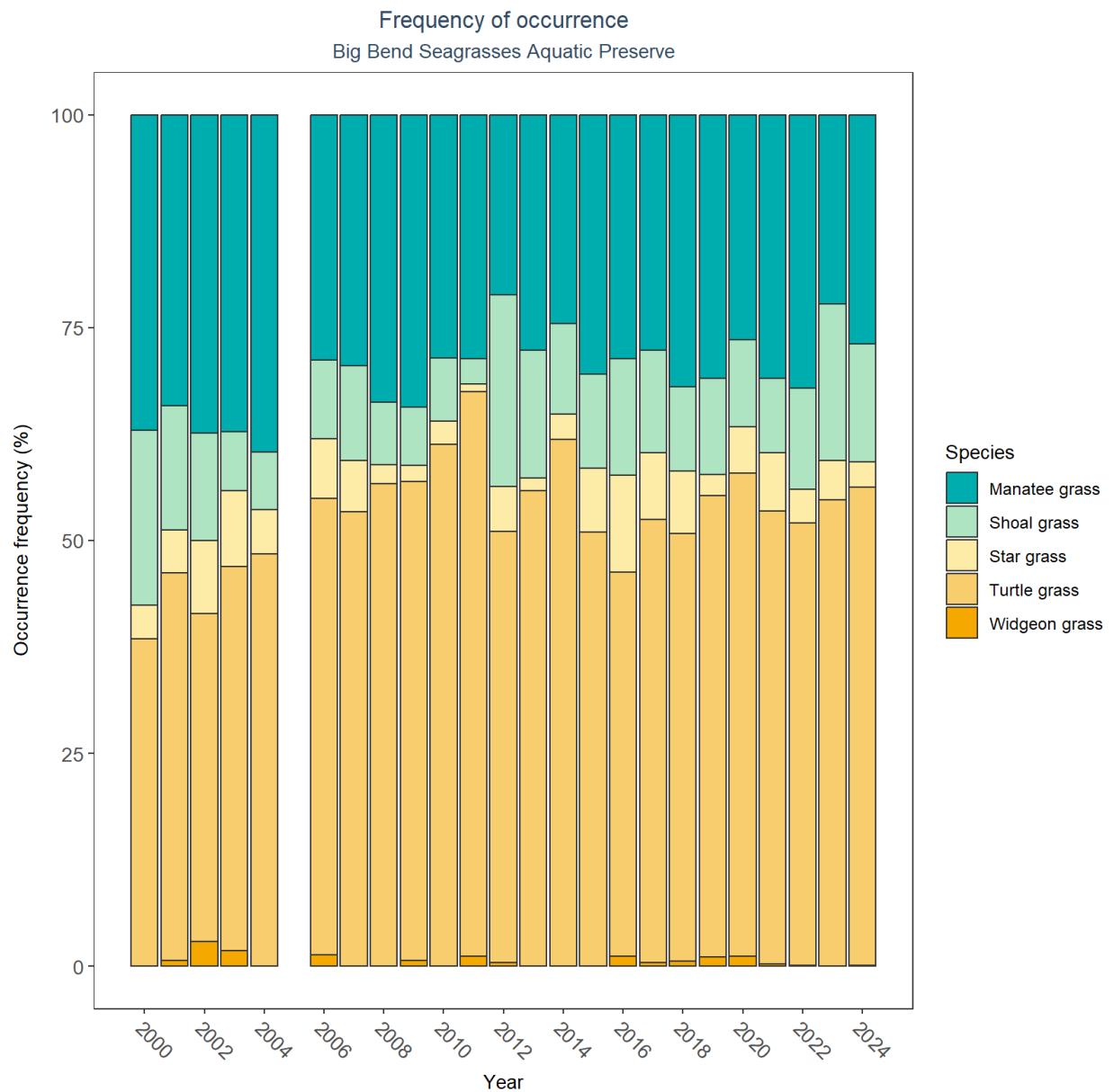
Table 4: SAV LME Results for Banana River Aquatic Preserve

Species	Statistical Trend	Period of Record	LME Intercept	LME Slope	p
Drift algae	Insufficient data to calculate trend	-	-	-	-
Shoal grass	Significantly decreasing trend	1997 - 2023	34.82	-1.42	0.00
Halophila spp.	Significantly decreasing trend	1997 - 2023	0.59	-0.02	0.00
Widgeon grass	Significantly decreasing trend	1997 - 2023	8.53	-0.40	0.00
Manatee grass	No significant trend	1997 - 2023	0.09	0.00	0.09
Turtle grass	Model did not fit the available data	-	-	-	-
Total SAV	Significantly decreasing trend	1994 - 2023	41.12	-1.67	0.00
Total seagrass	Insufficient data to calculate trend	-	-	-	-





Big Bend Seagrasses Aquatic Preserve



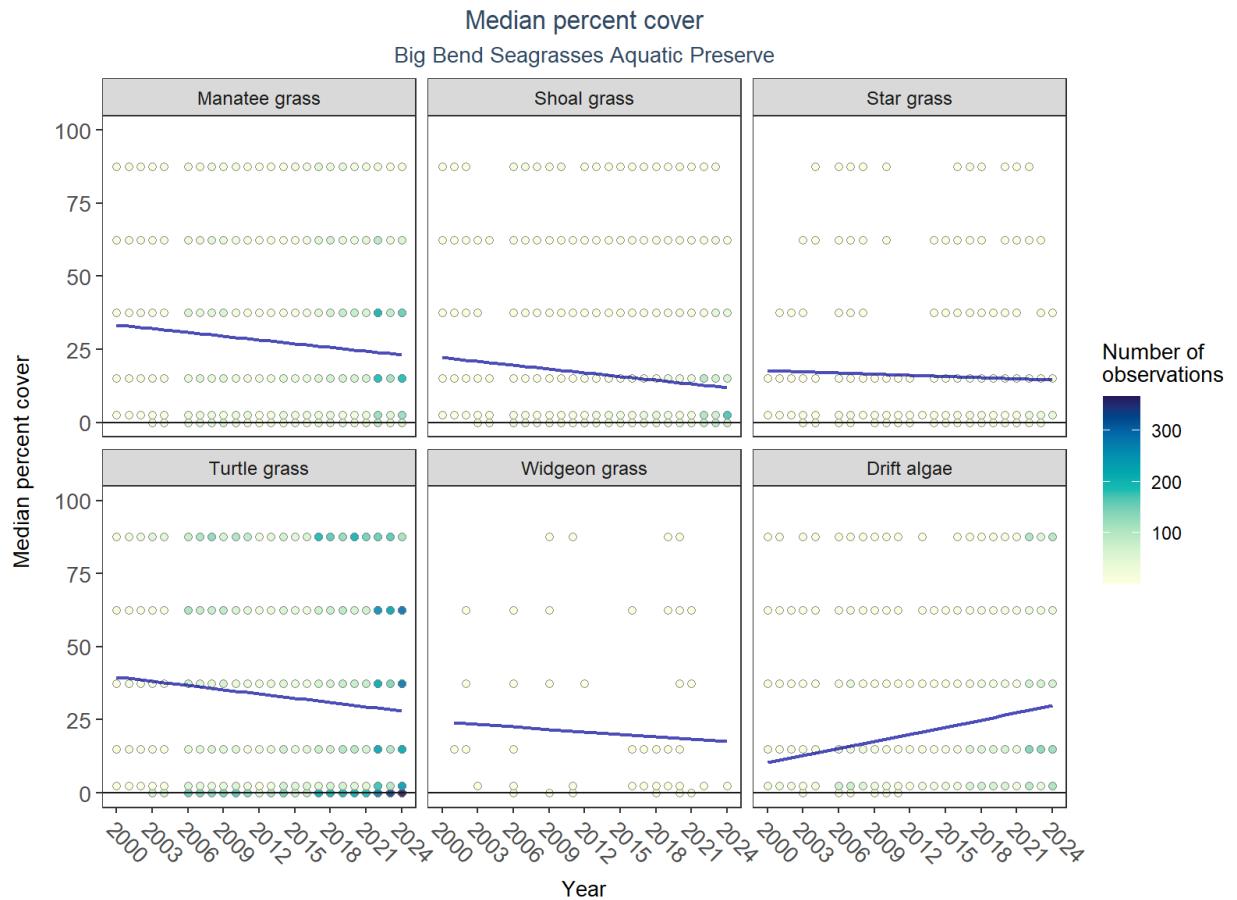
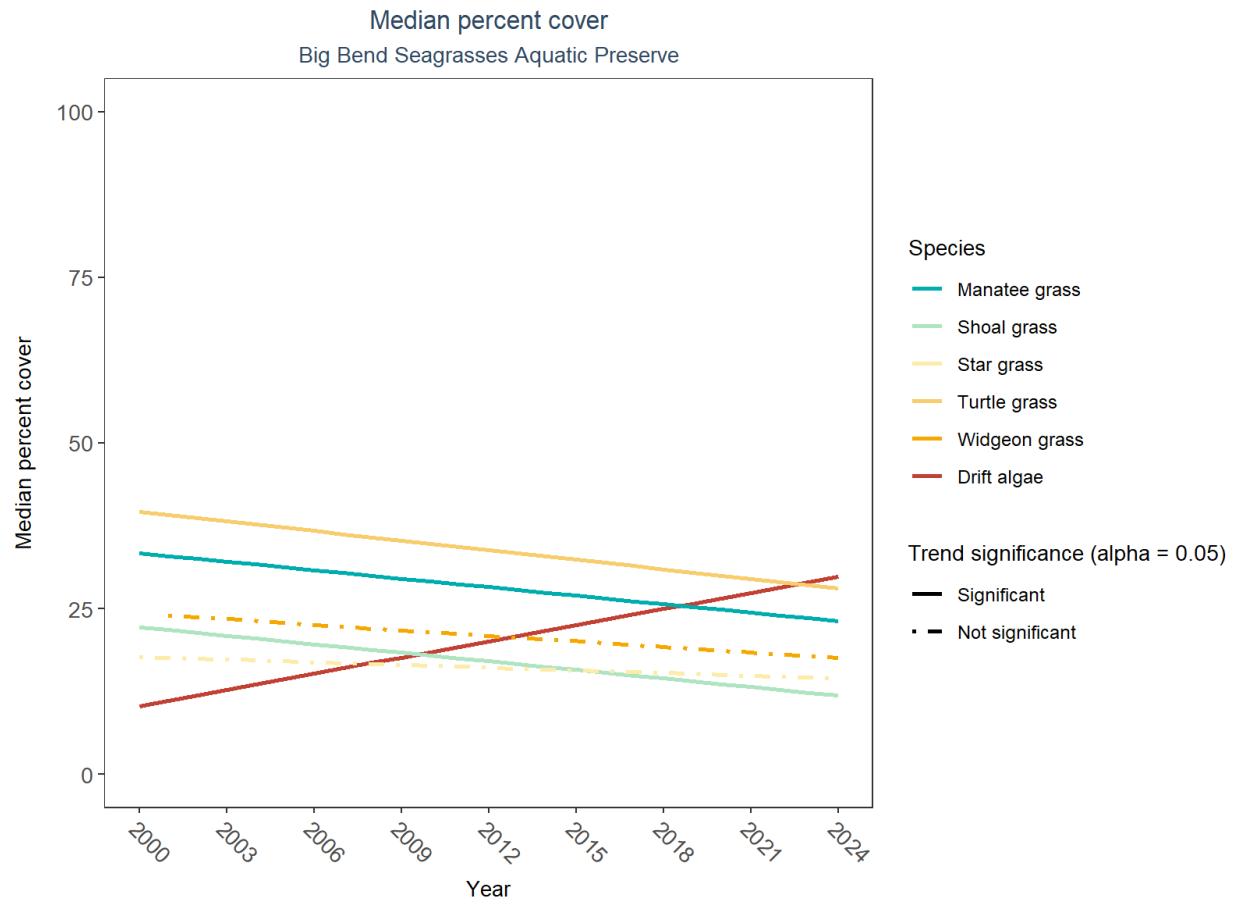
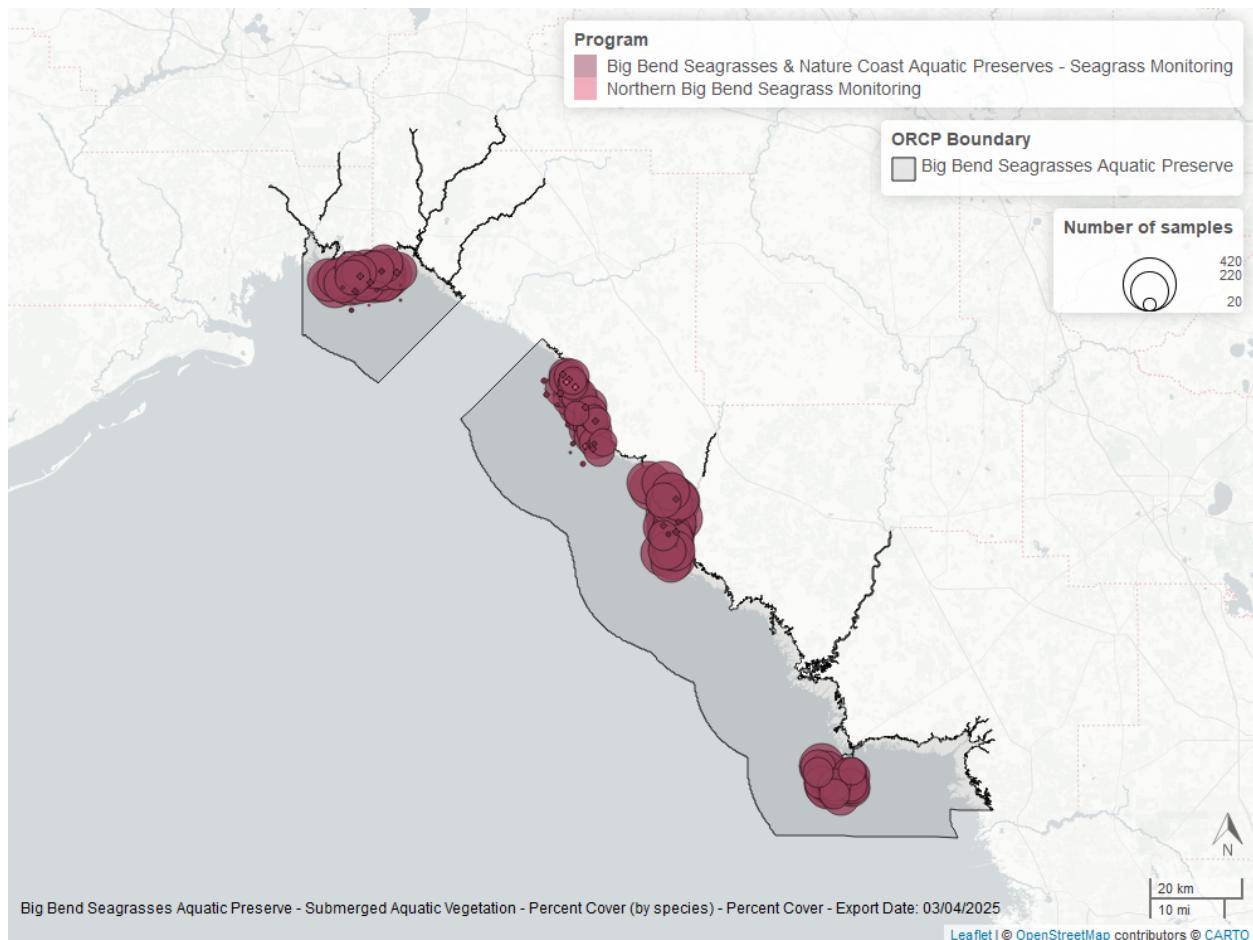


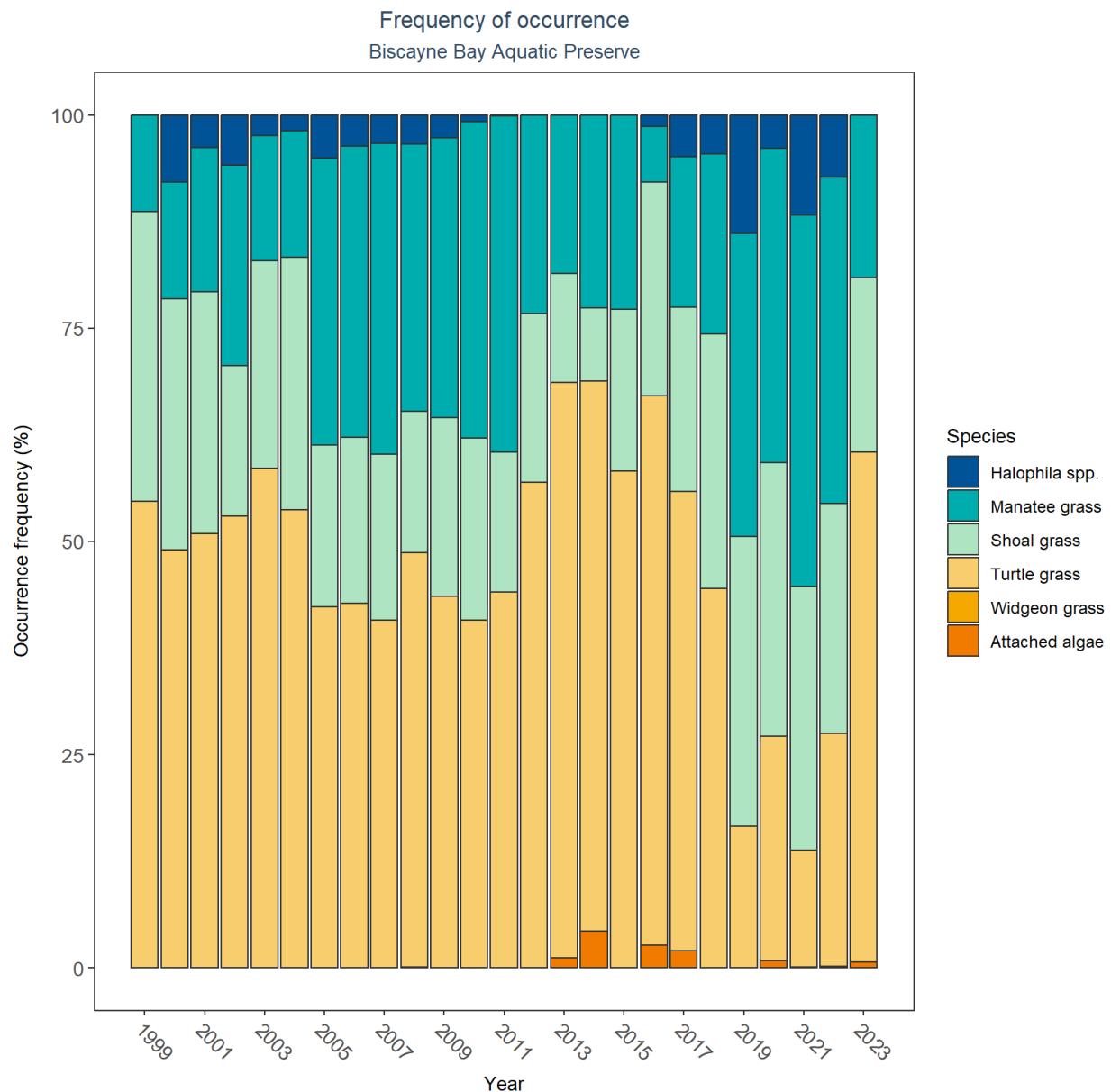
Table 5: SAV LME Results for Big Bend Seagrasses Aquatic Preserve

Species	Statistical Trend	Period of Record	LME Intercept	LME Slope	p
Drift algae	Significantly increasing trend	2000 - 2024	5.45	0.81	0.00
Shoal grass	Significantly decreasing trend	2000 - 2024	24.83	-0.43	0.00
Star grass	No significant trend	2000 - 2024	18.55	-0.13	0.31
No grass in quadrat	Model did not fit the available data	-	-	-	-
Widgeon grass	No significant trend	2001 - 2024	25.94	-0.28	0.60
Manatee grass	Significantly decreasing trend	2000 - 2024	35.95	-0.43	0.00
Turtle grass	Significantly decreasing trend	2000 - 2024	42.52	-0.48	0.00





Biscayne Bay Aquatic Preserve



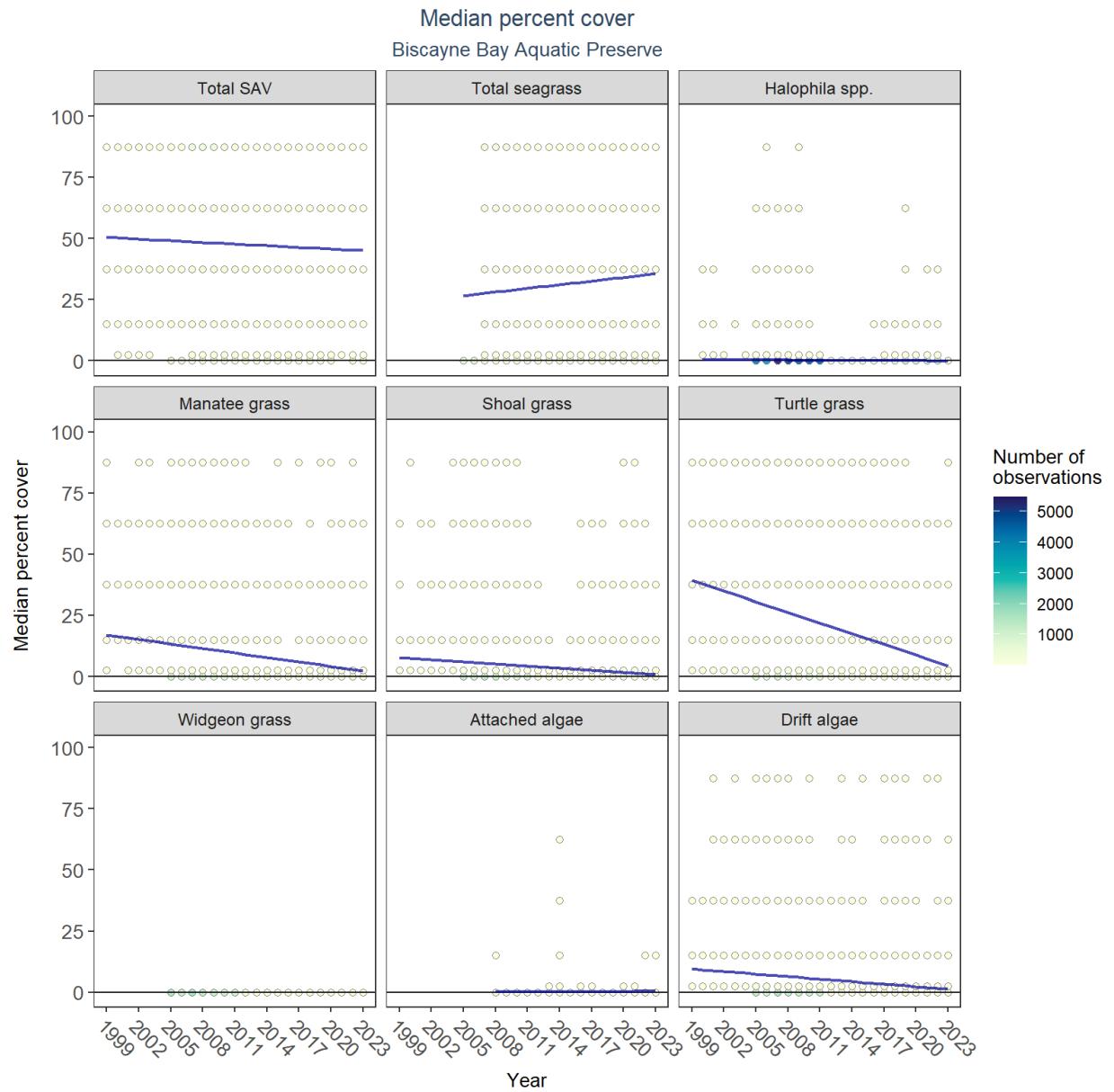
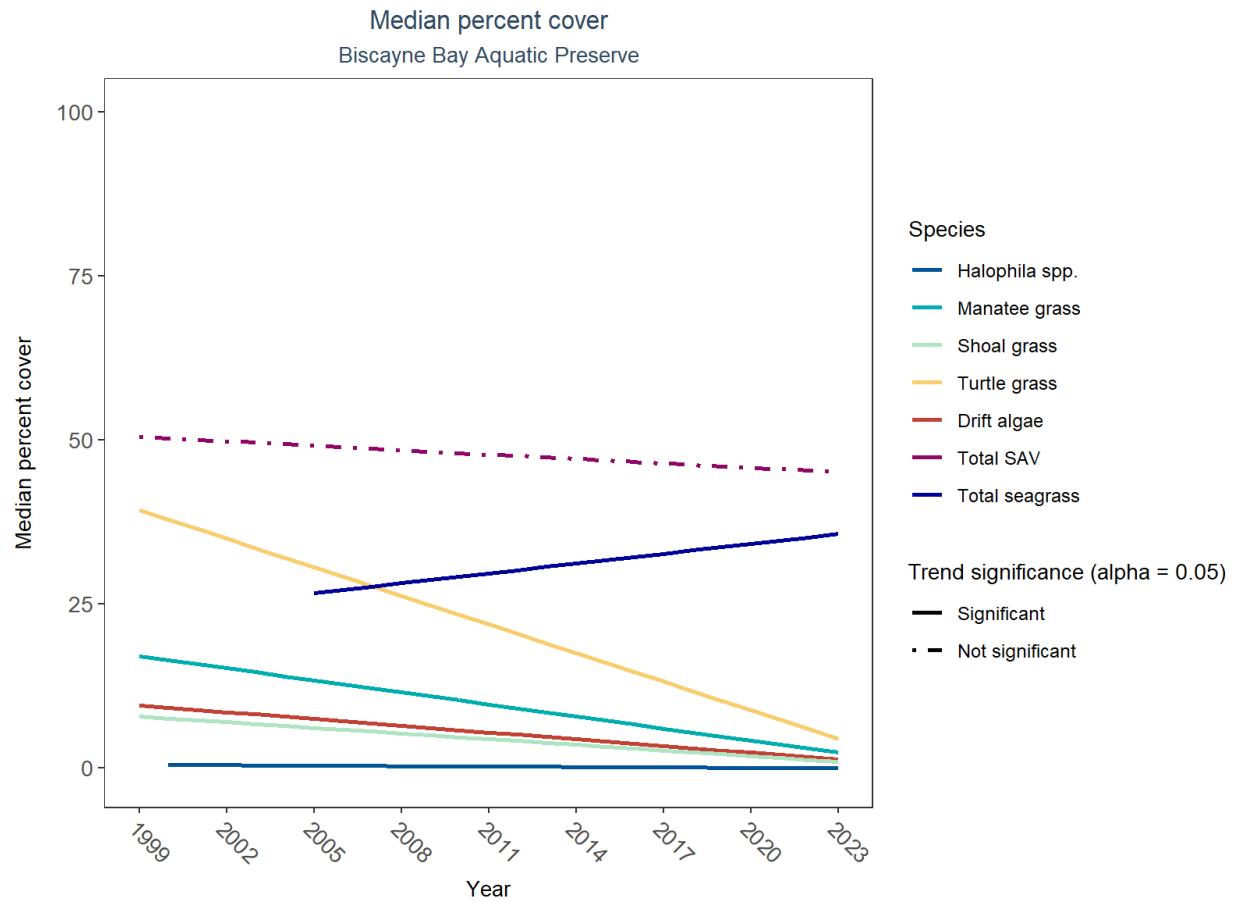
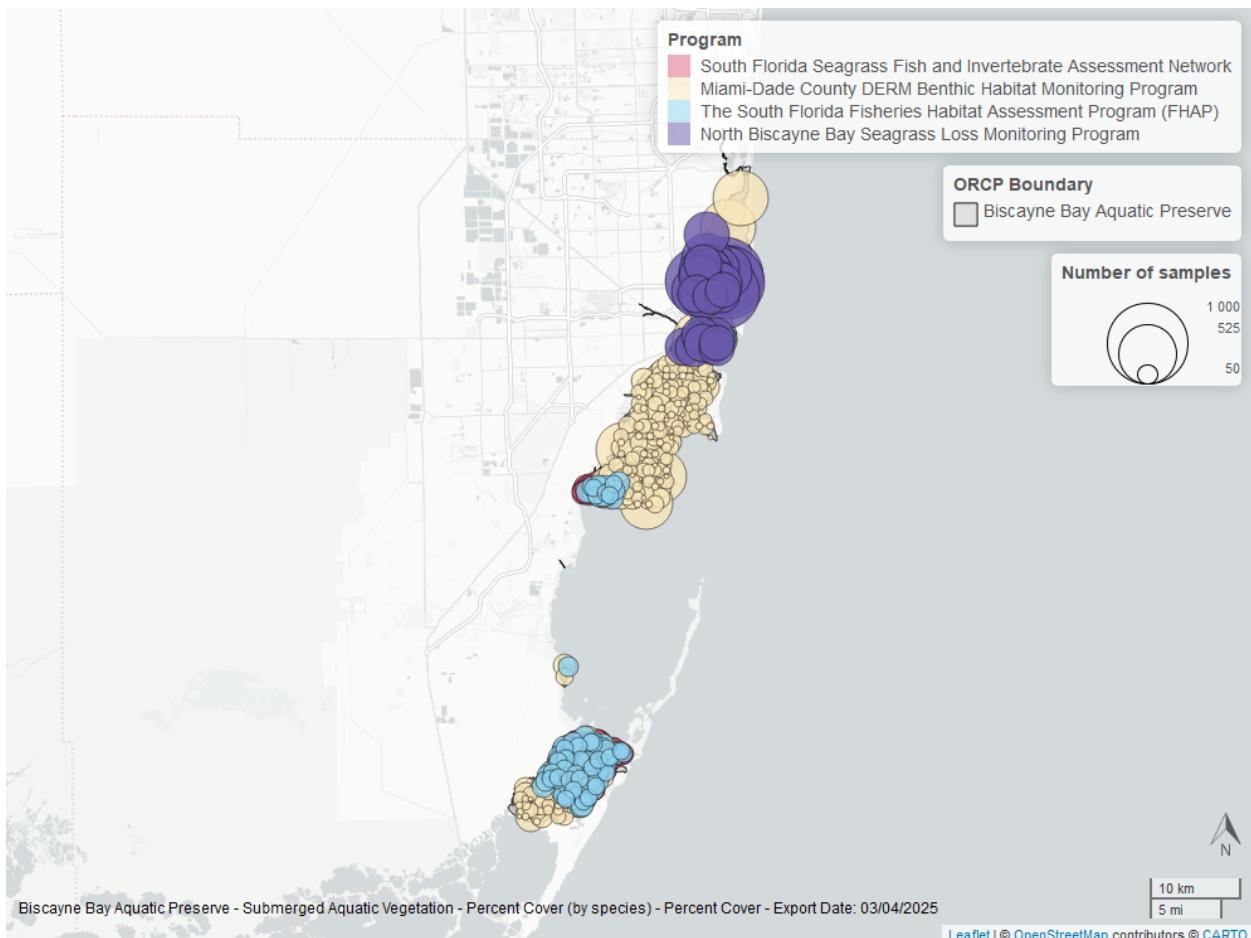


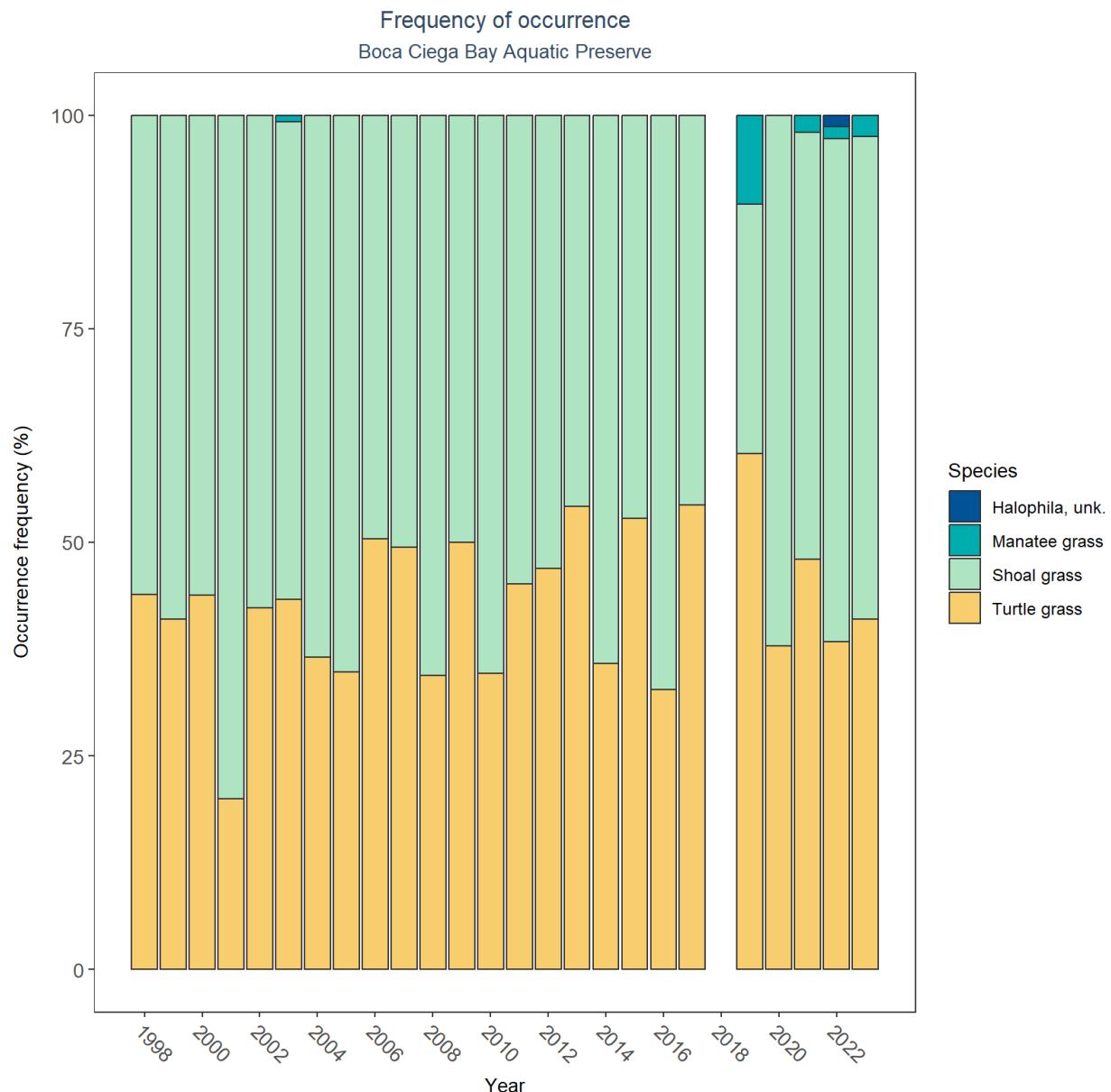
Table 6: SAV LME Results for Biscayne Bay Aquatic Preserve

Species	Statistical Trend	Period of Record	LME Intercept	LME Slope	p
Attached algae	Significantly increasing trend	2008 - 2023	-0.25	0.02	0.04
Drift algae	Significantly decreasing trend	1999 - 2023	11.24	-0.34	0.00
Shoal grass	Significantly decreasing trend	1999 - 2023	9.26	-0.29	0.00
Halophila spp.	Significantly decreasing trend	2000 - 2023	0.59	-0.02	0.02
Widgeon grass	Model did not fit the available data	-	-	-	-
Manatee grass	Significantly decreasing trend	1999 - 2023	20.08	-0.61	0.00
Turtle grass	Significantly decreasing trend	1999 - 2023	46.55	-1.45	0.00
Total SAV	No significant trend	1999 - 2023	51.58	-0.22	0.24
Total seagrass	Significantly increasing trend	2005 - 2023	21.15	0.50	0.01





Boca Ciega Bay Aquatic Preserve



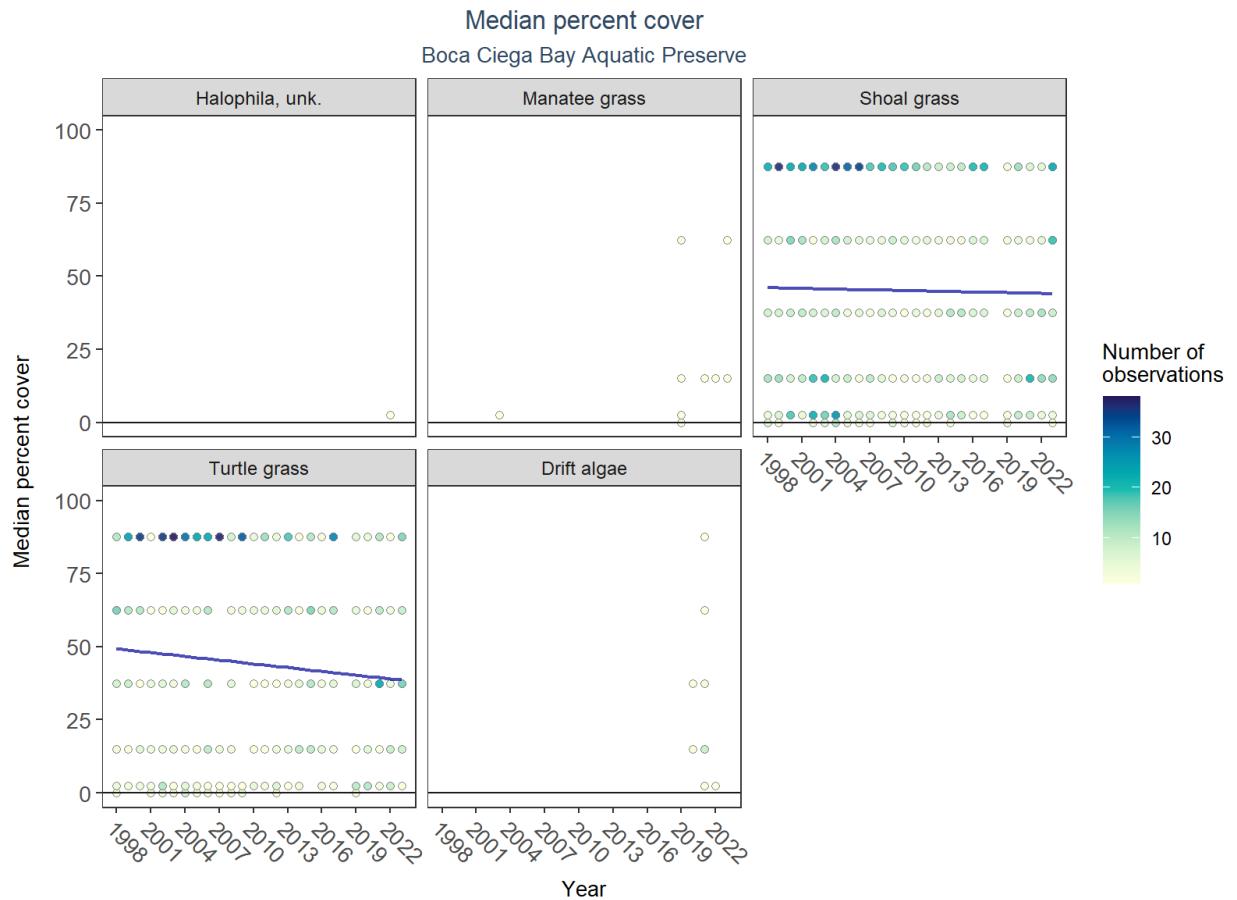
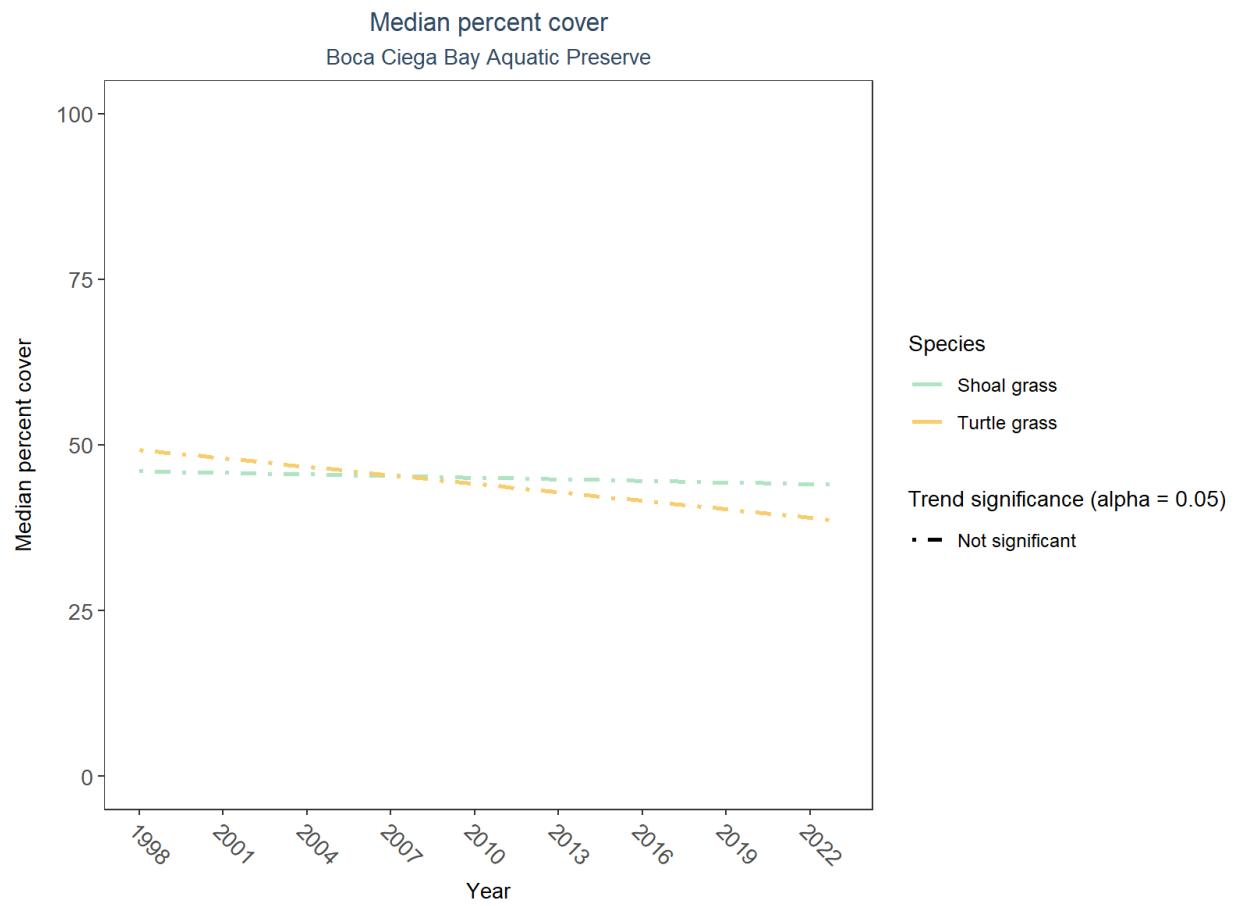
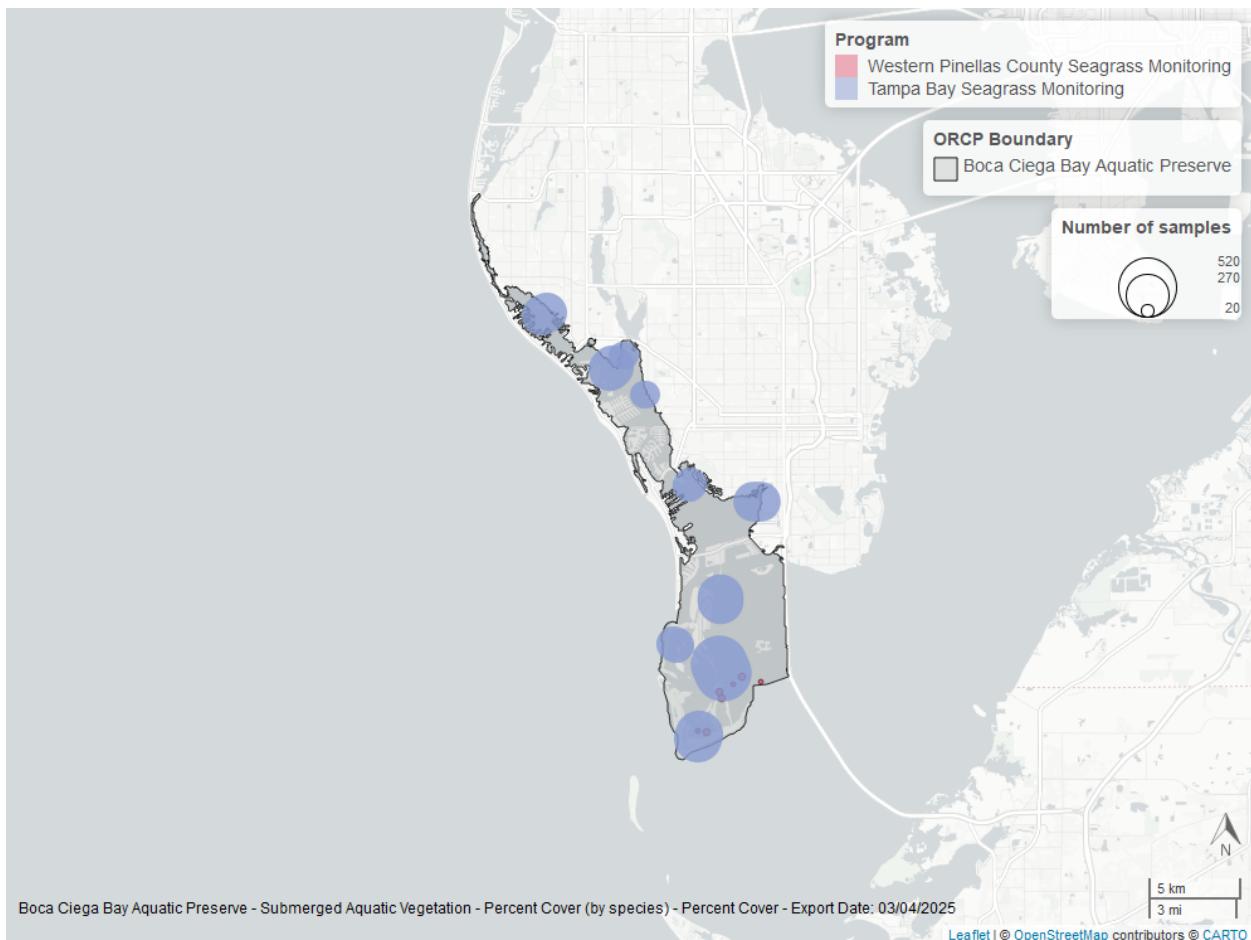


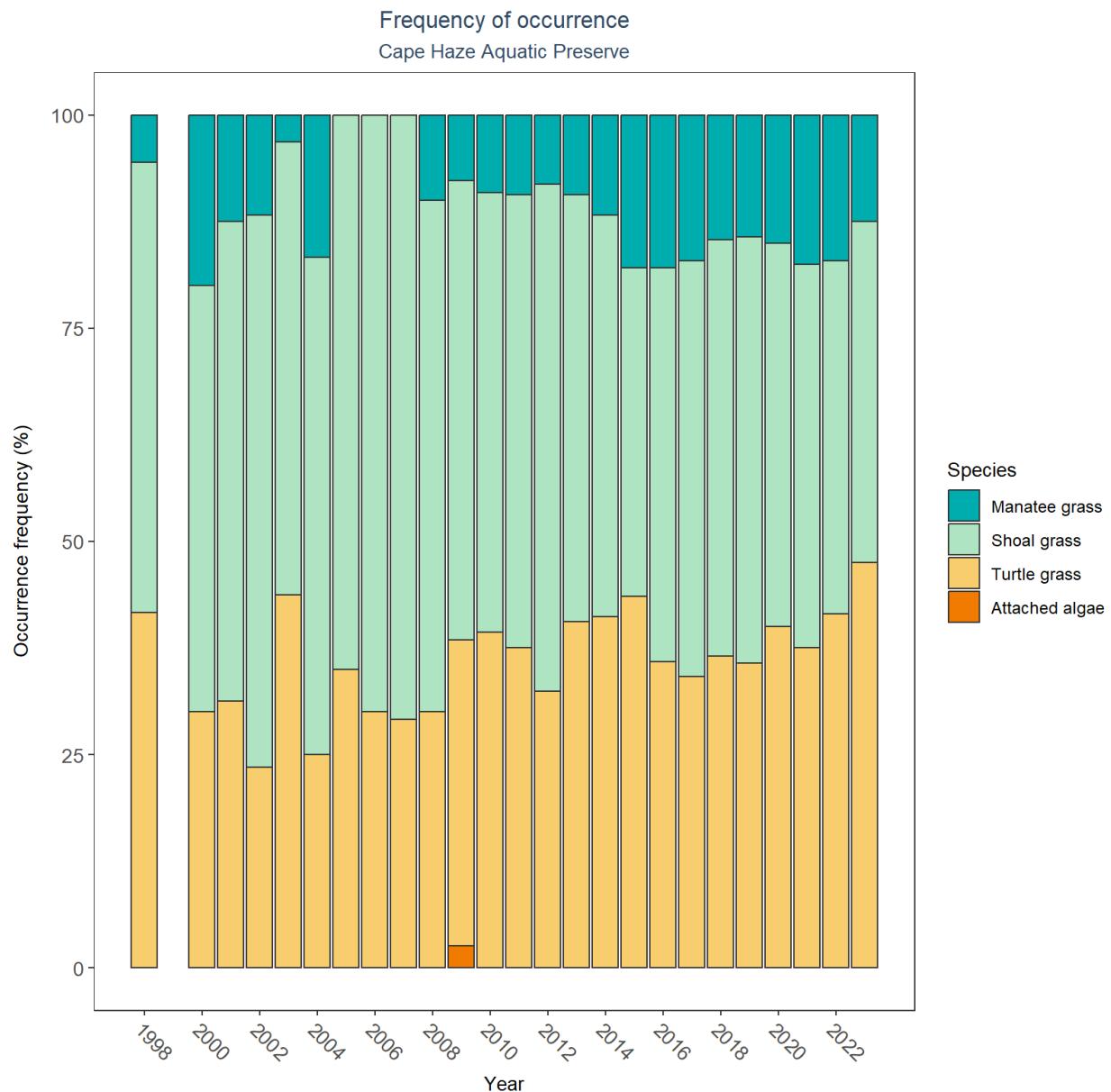
Table 7: SAV LME Results for Boca Ciega Bay Aquatic Preserve

Species	Statistical Trend	Period of Record	LME Intercept	LME Slope	p
Drift algae	Insufficient data to calculate trend	-	-	-	-
Shoal grass	No significant trend	1998 - 2023	46.38	-0.08	0.68
No grass in quadrat	Model did not fit the available data	-	-	-	-
Manatee grass	Model did not fit the available data	-	-	-	-
Turtle grass	No significant trend	1998 - 2023	50.99	-0.43	0.13
Halophila, unk.	Insufficient data to calculate trend	-	-	-	-





Cape Haze Aquatic Preserve



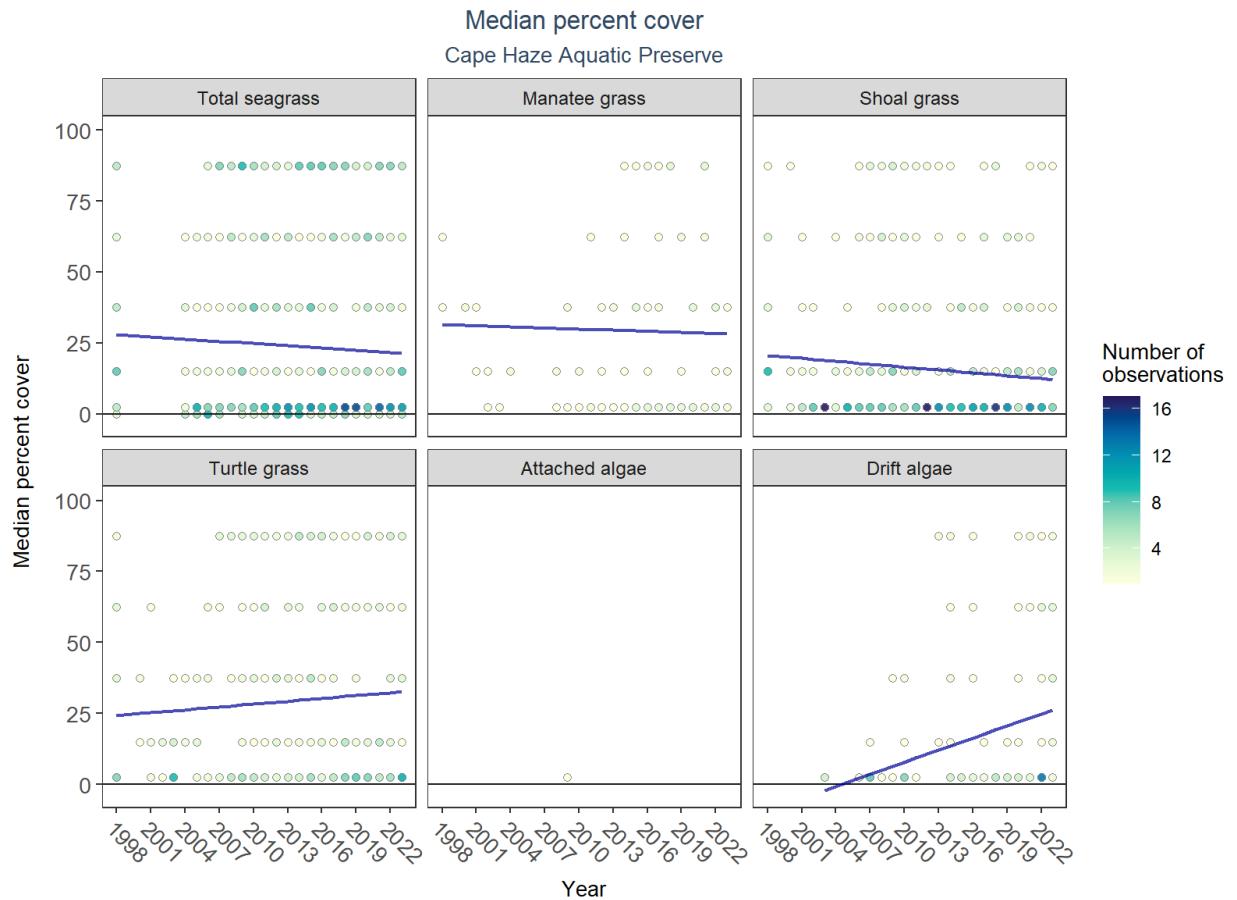
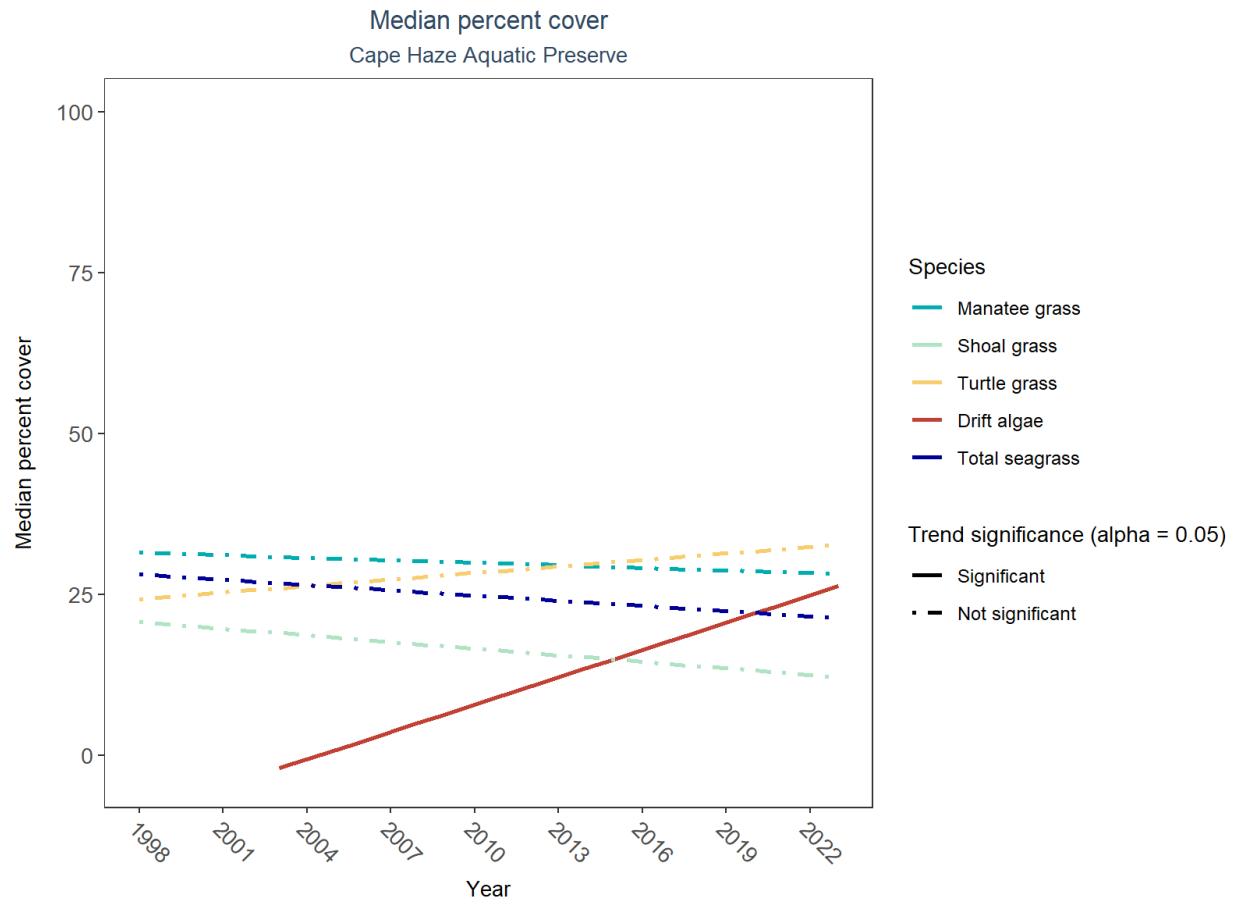
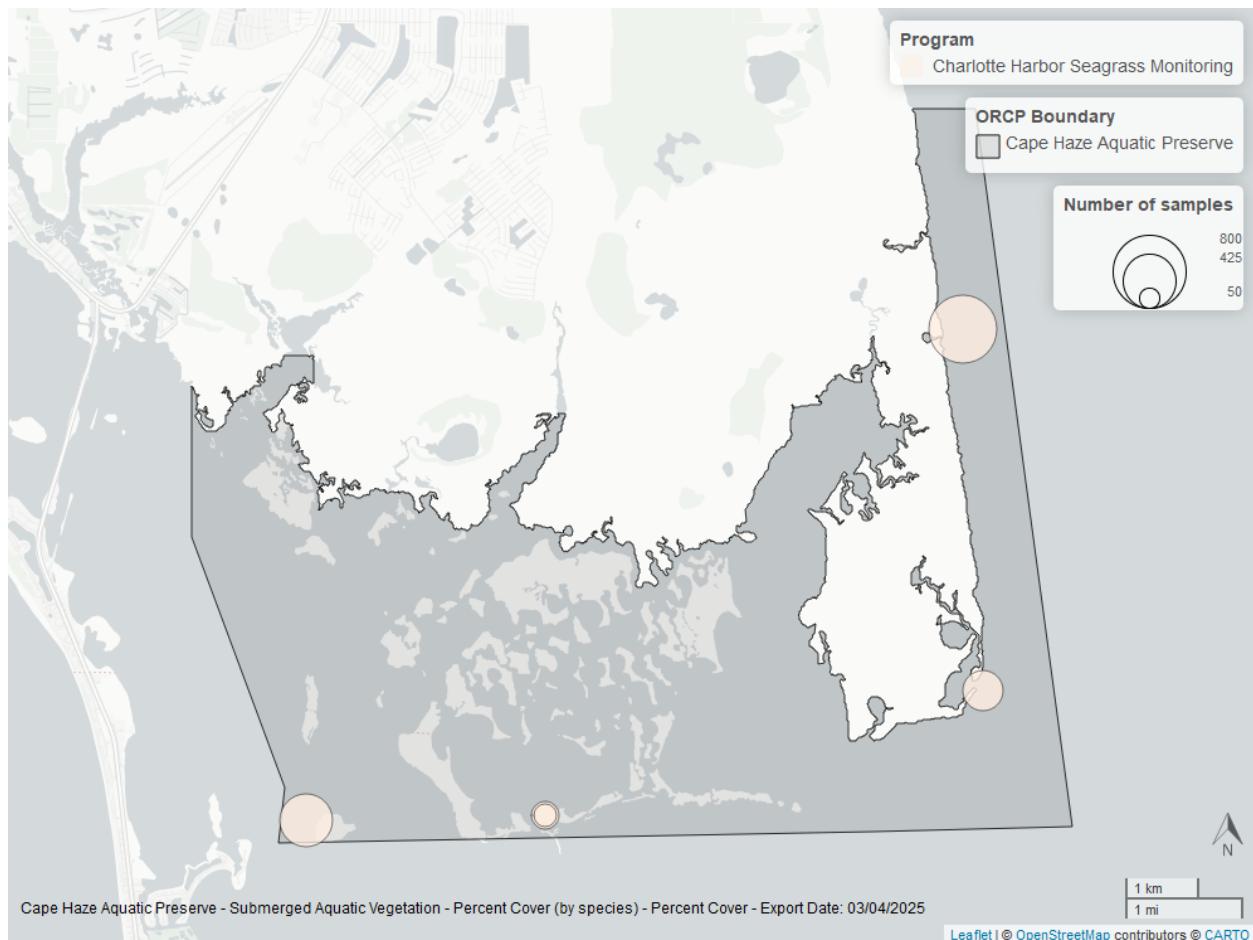


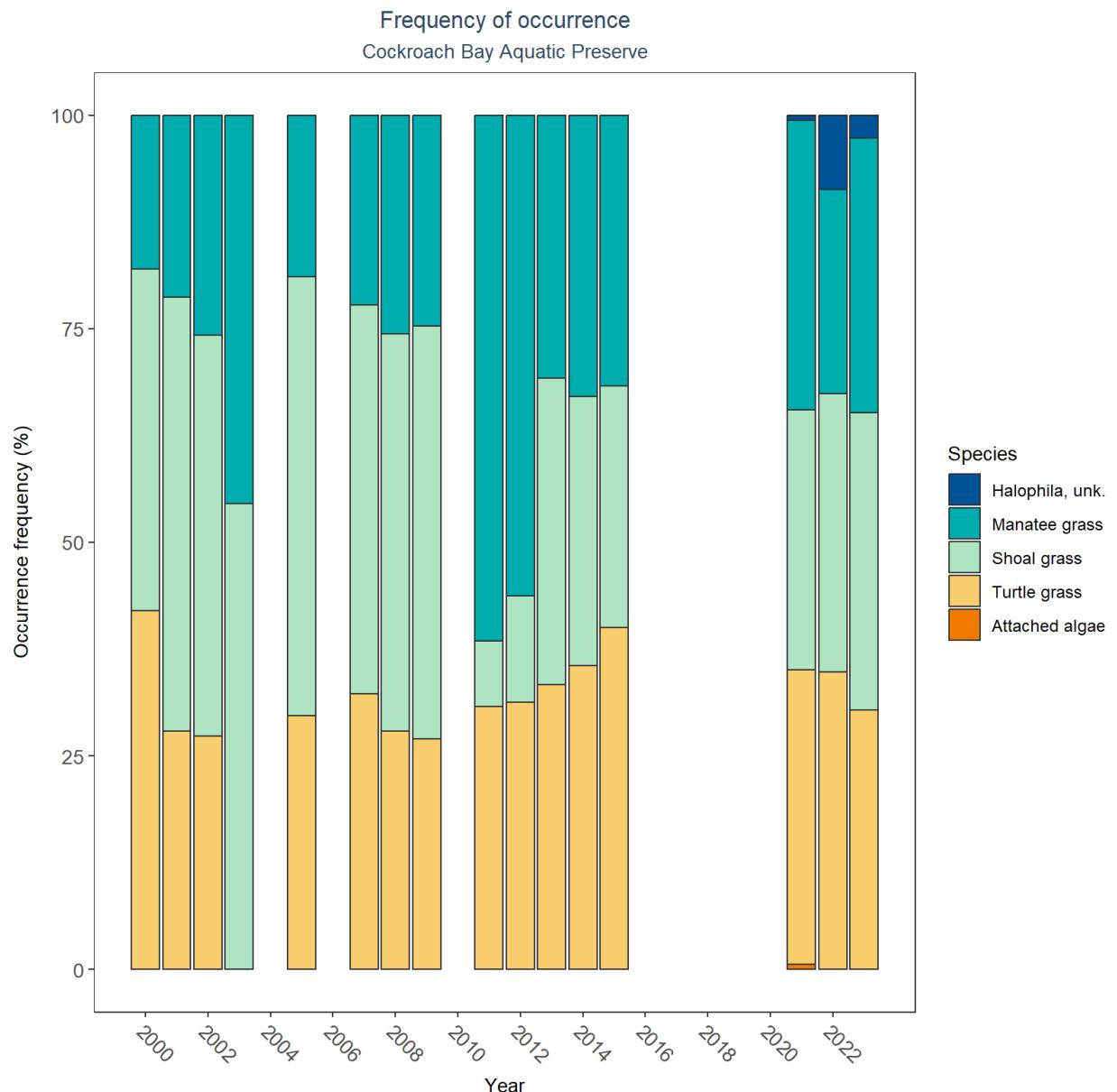
Table 8: SAV LME Results for Cape Haze Aquatic Preserve

Species	Statistical Trend	Period of Record	LME Intercept	LME Slope	p
Attached algae	Insufficient data to calculate trend	-	-	-	-
Drift algae	Significantly increasing trend	2003 - 2023	-14.78	1.41	0.00
Shoal grass	No significant trend	1998 - 2023	22.01	-0.34	0.37
No grass in quadrat	Model did not fit the available data	-	-	-	-
Manatee grass	No significant trend	1998 - 2023	32.01	-0.13	0.90
Turtle grass	No significant trend	1998 - 2023	22.93	0.34	0.29
Total seagrass	No significant trend	1998 - 2023	29.15	-0.27	0.51





Cockroach Bay Aquatic Preserve



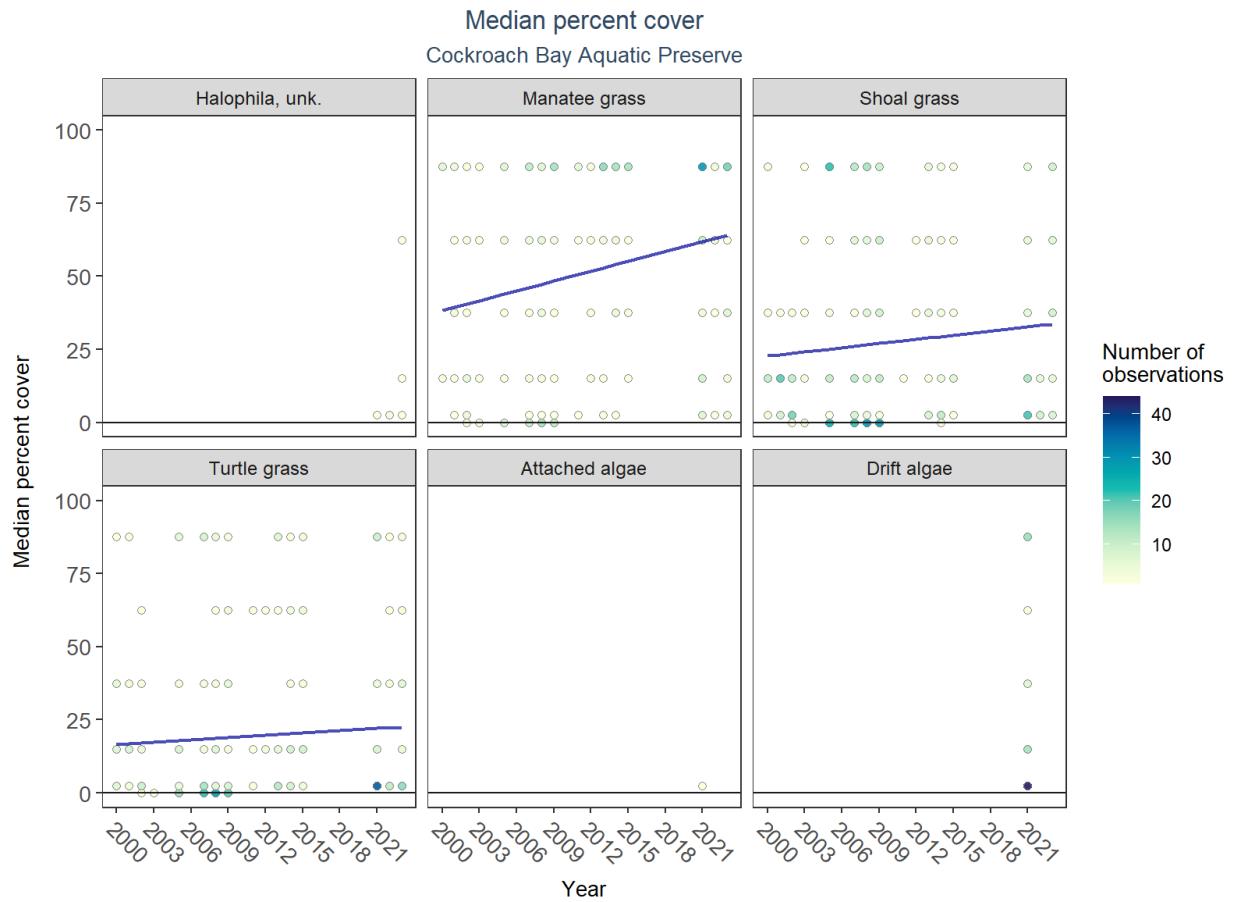
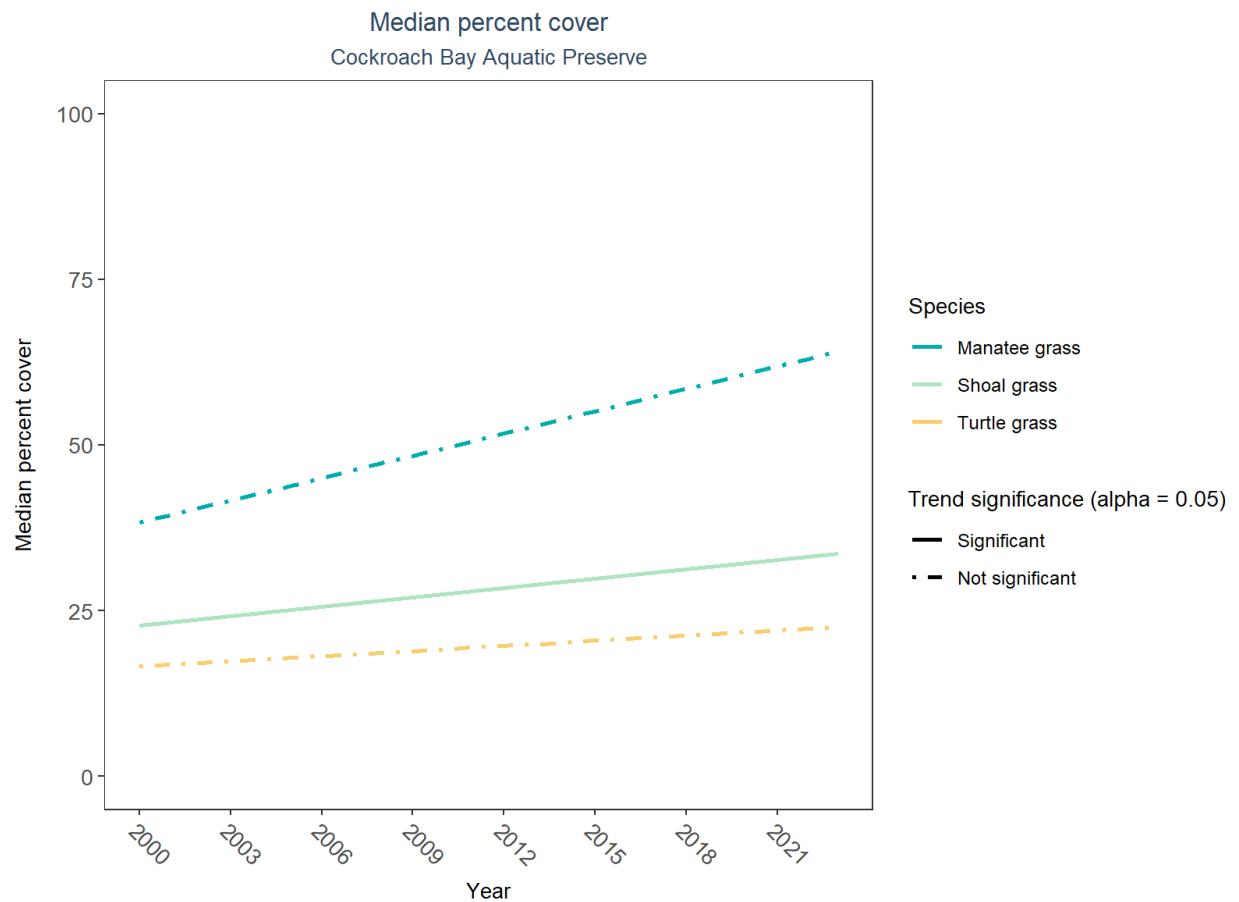
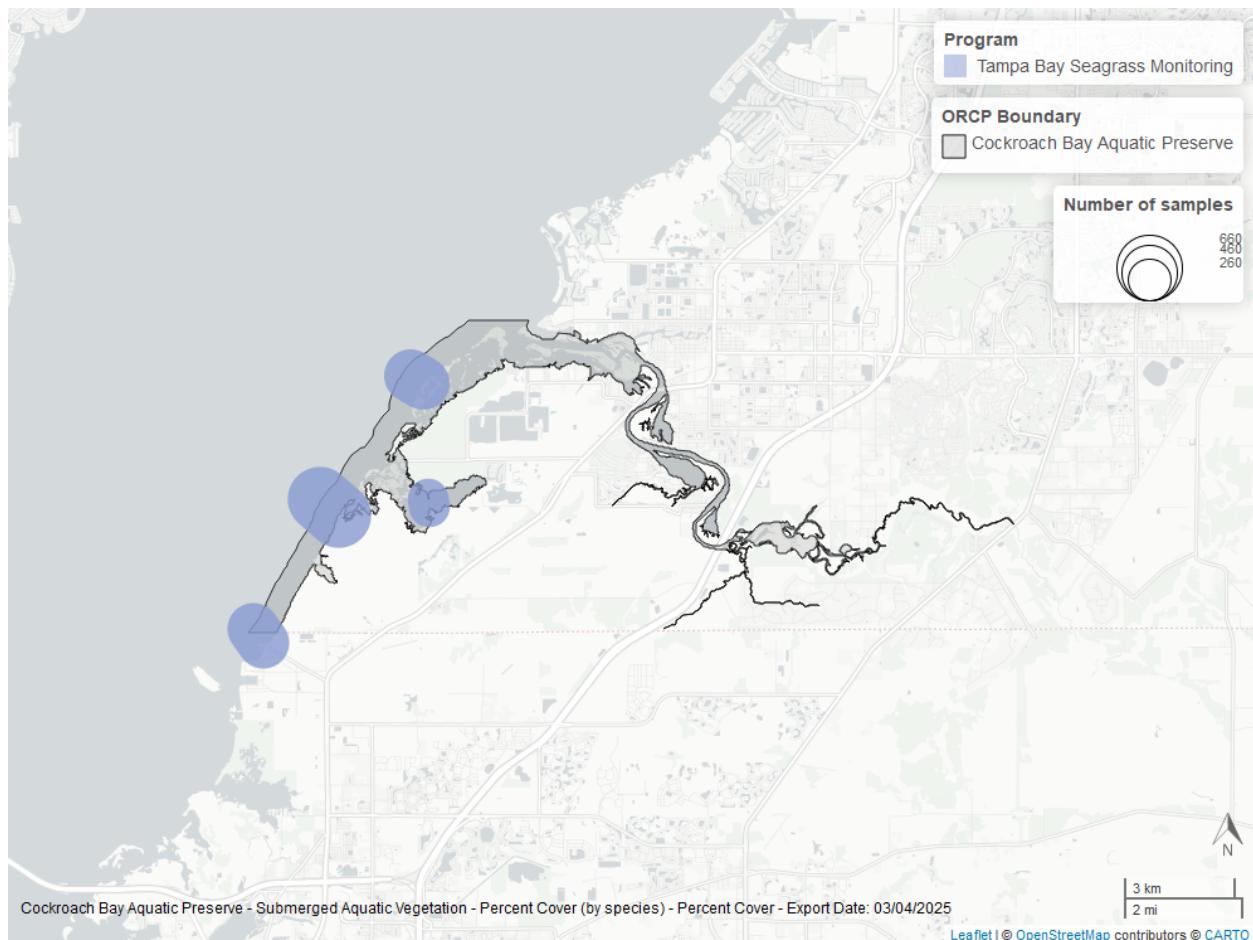


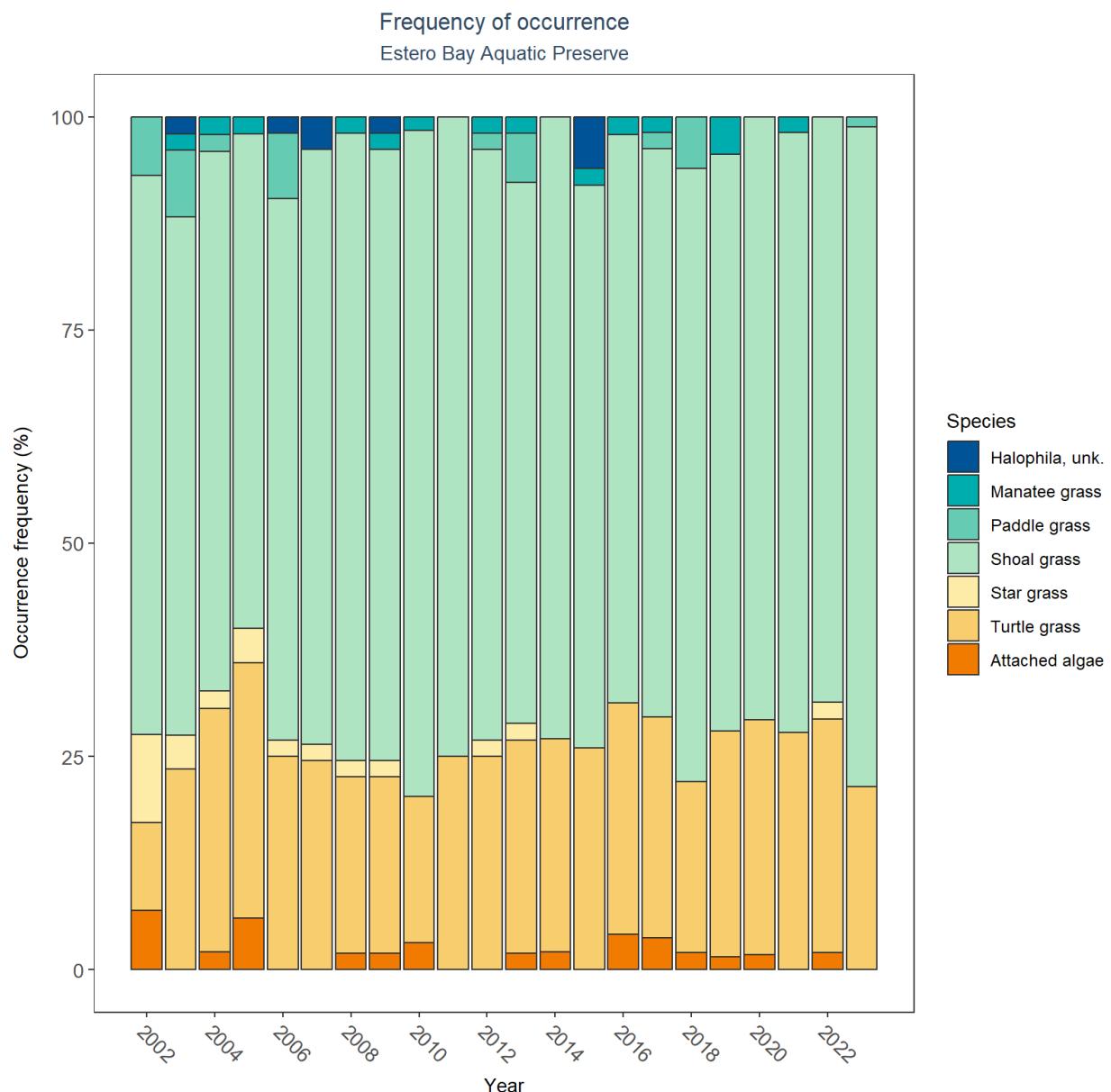
Table 9: SAV LME Results for Cockroach Bay Aquatic Preserve

Species	Statistical Trend	Period of Record	LME Intercept	LME Slope	p
Attached algae	Insufficient data to calculate trend	-	-	-	-
Drift algae	Insufficient data to calculate trend	-	-	-	-
Shoal grass	Significantly increasing trend	2000 - 2023	19.90	0.47	0.04
No grass in quadrat	Model did not fit the available data	-	-	-	-
Manatee grass	No significant trend	2000 - 2023	31.55	1.12	0.05
Turtle grass	No significant trend	2000 - 2023	15.05	0.26	0.21
Halophila, unk.	Insufficient data to calculate trend	-	-	-	-





Estero Bay Aquatic Preserve



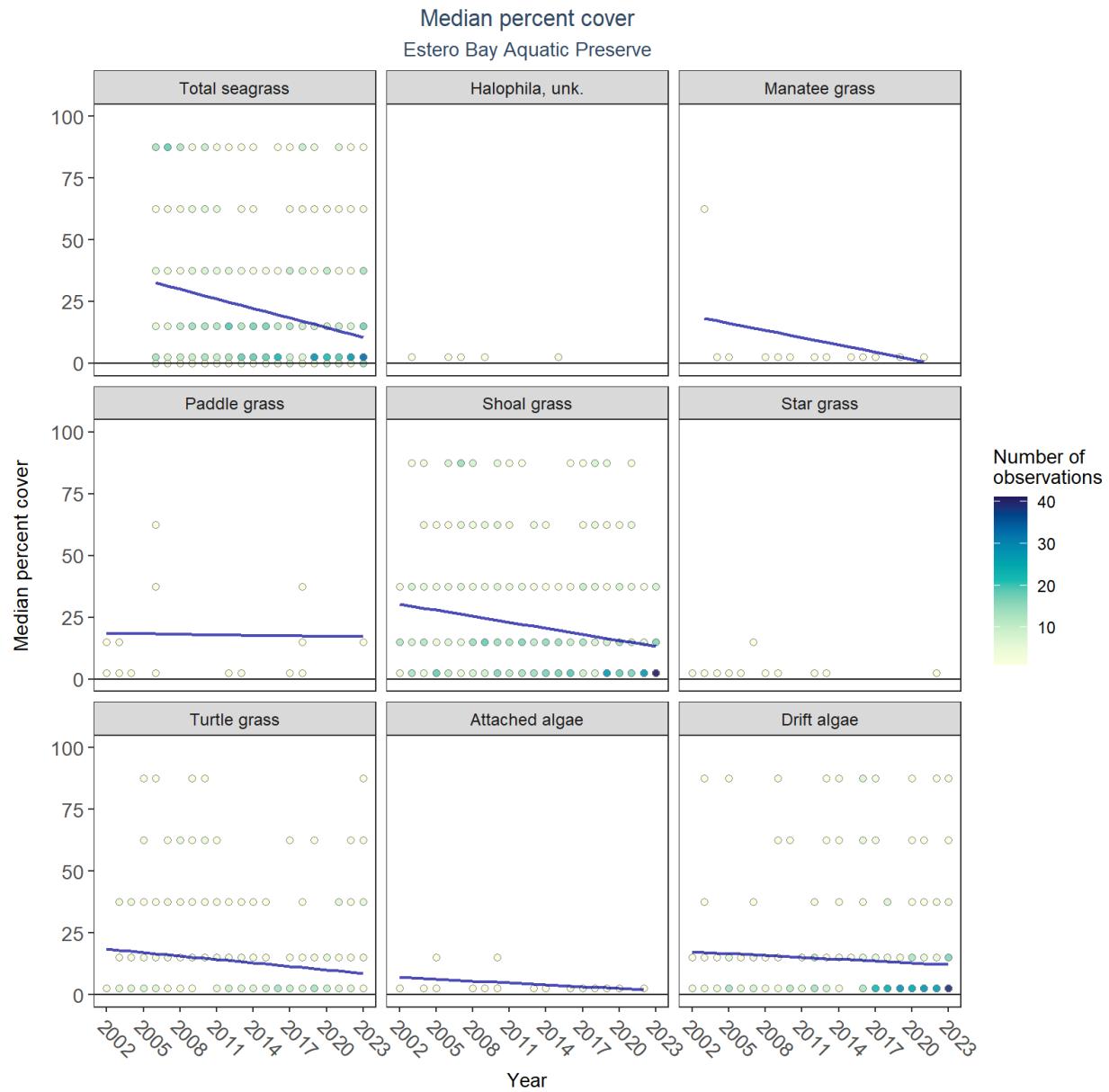
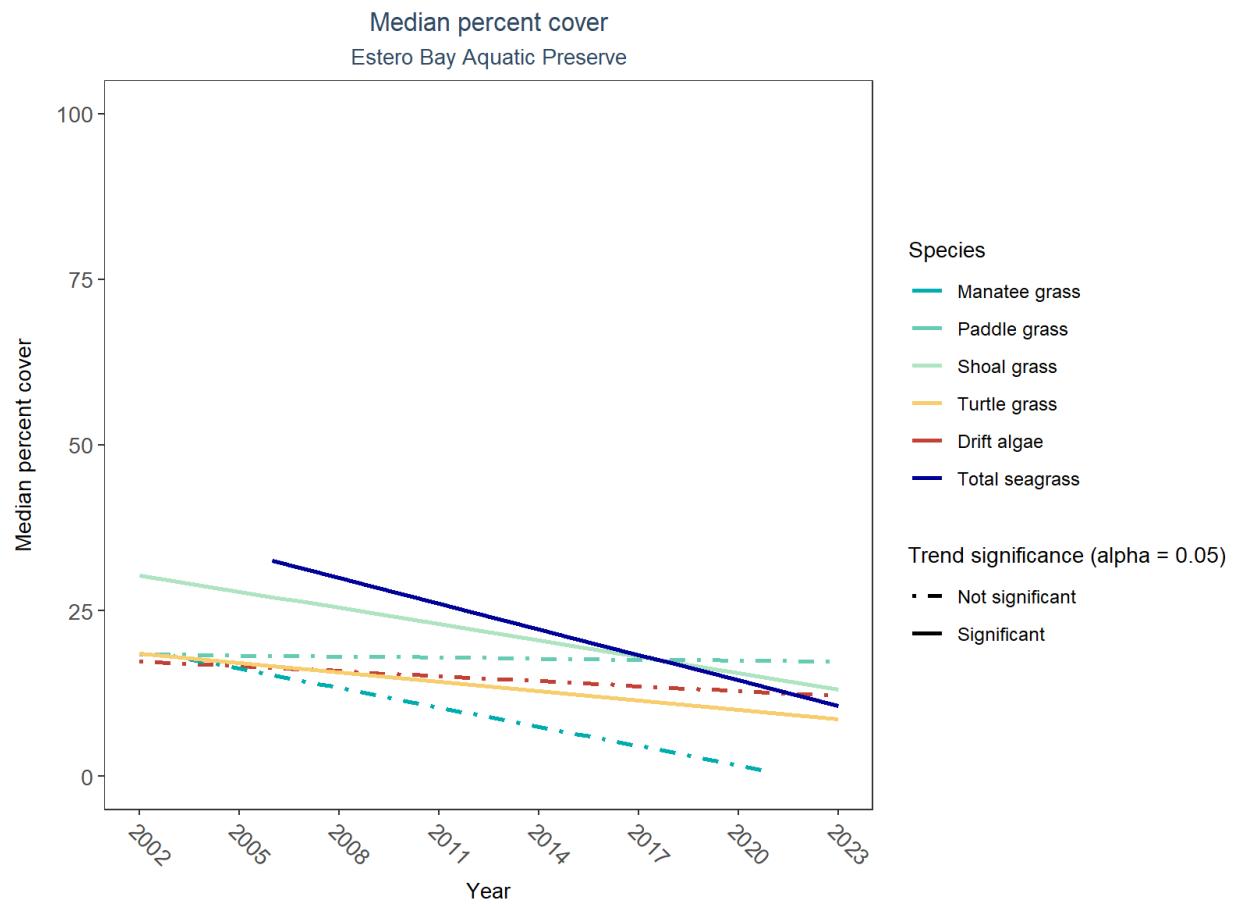
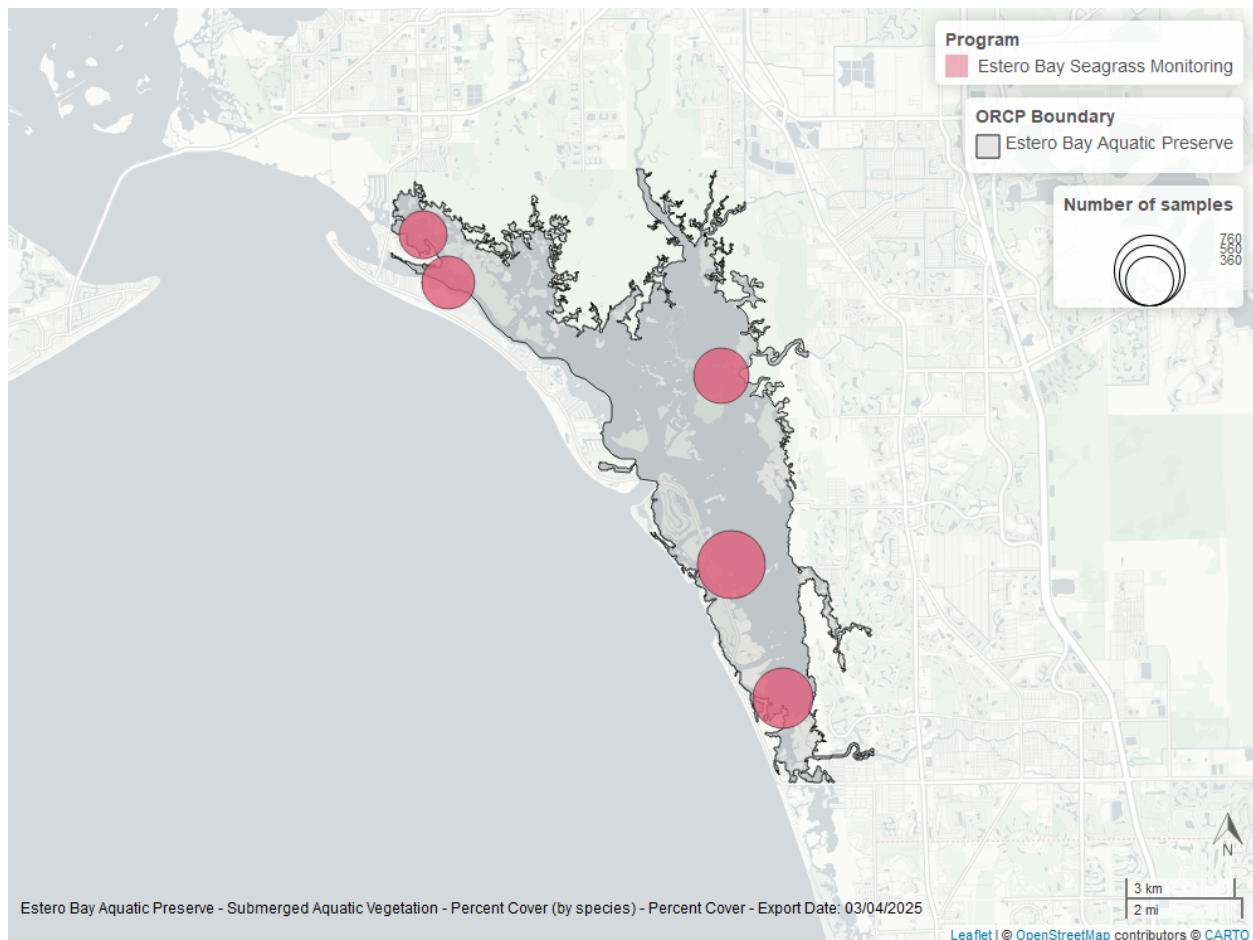


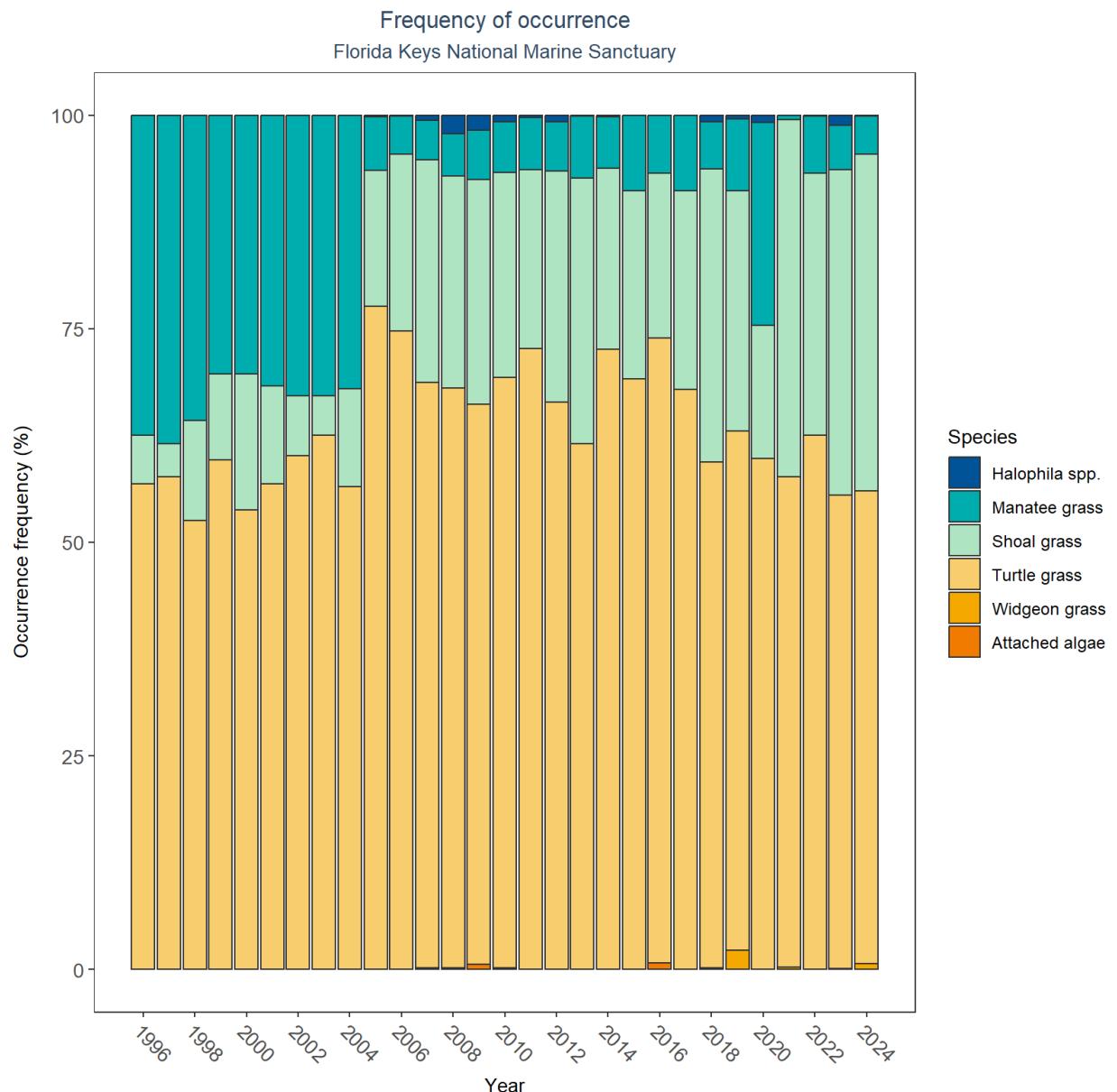
Table 10: SAV LME Results for Estero Bay Aquatic Preserve

Species	Statistical Trend	Period of Record	LME Intercept	LME Slope	p
Attached algae	No significant trend	2002 - 2022	9.04	-0.25	0.38
Drift algae	No significant trend	2002 - 2023	19.40	-0.25	0.38
Shoal grass	Significantly decreasing trend	2002 - 2023	36.88	-0.82	0.00
Paddle grass	No significant trend	2002 - 2023	18.90	-0.06	0.92
Star grass	Model did not fit the available data	-	-	-	-
No grass in quadrat	Model did not fit the available data	-	-	-	-
Manatee grass	No significant trend	2003 - 2021	26.94	-0.97	0.35
Turtle grass	Significantly decreasing trend	2002 - 2023	22.27	-0.47	0.02
Total seagrass	Significantly decreasing trend	2006 - 2023	48.10	-1.29	0.02
Halophila, unk.	Model did not fit the available data	-	-	-	-





Florida Keys National Marine Sanctuary



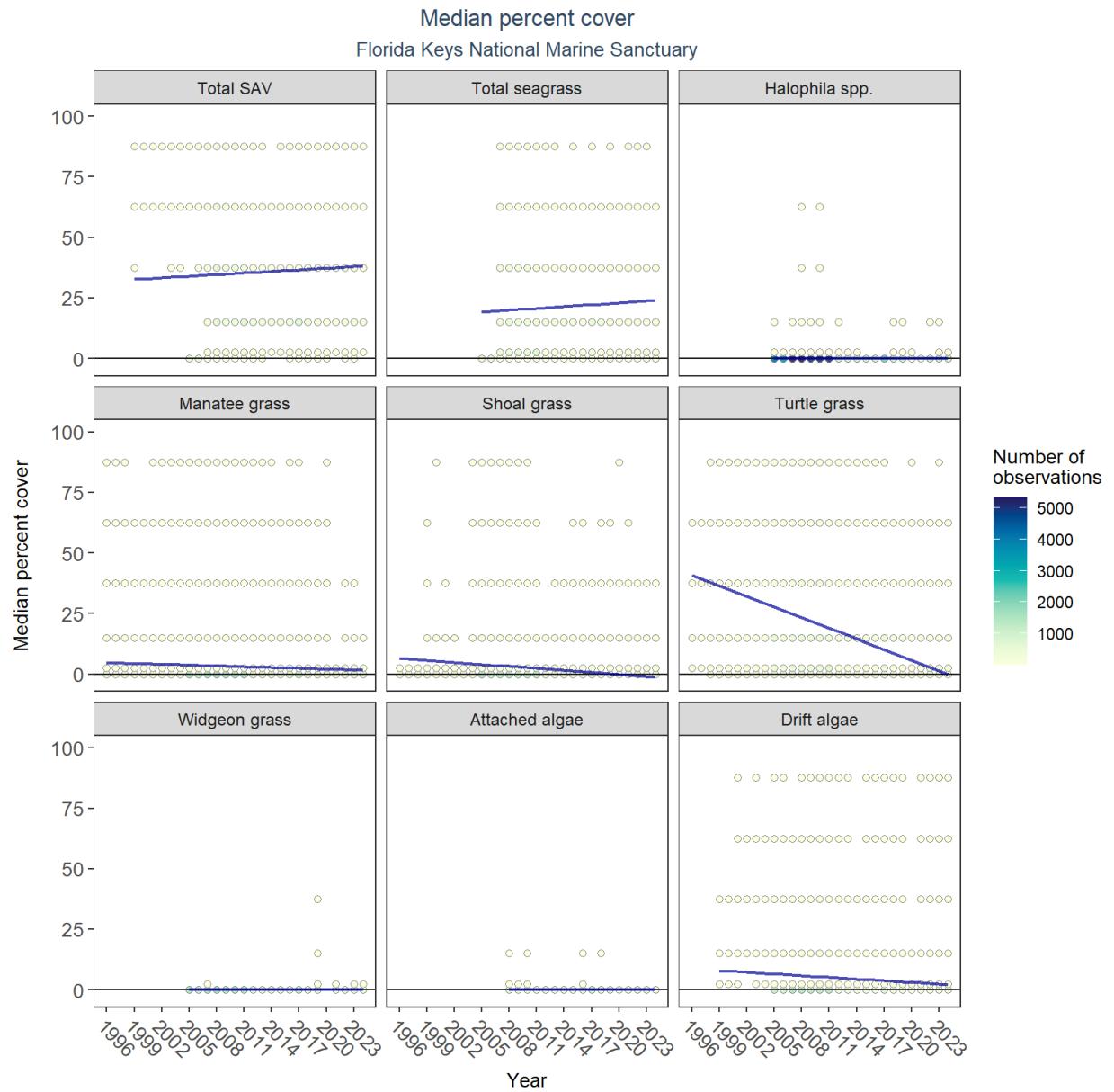
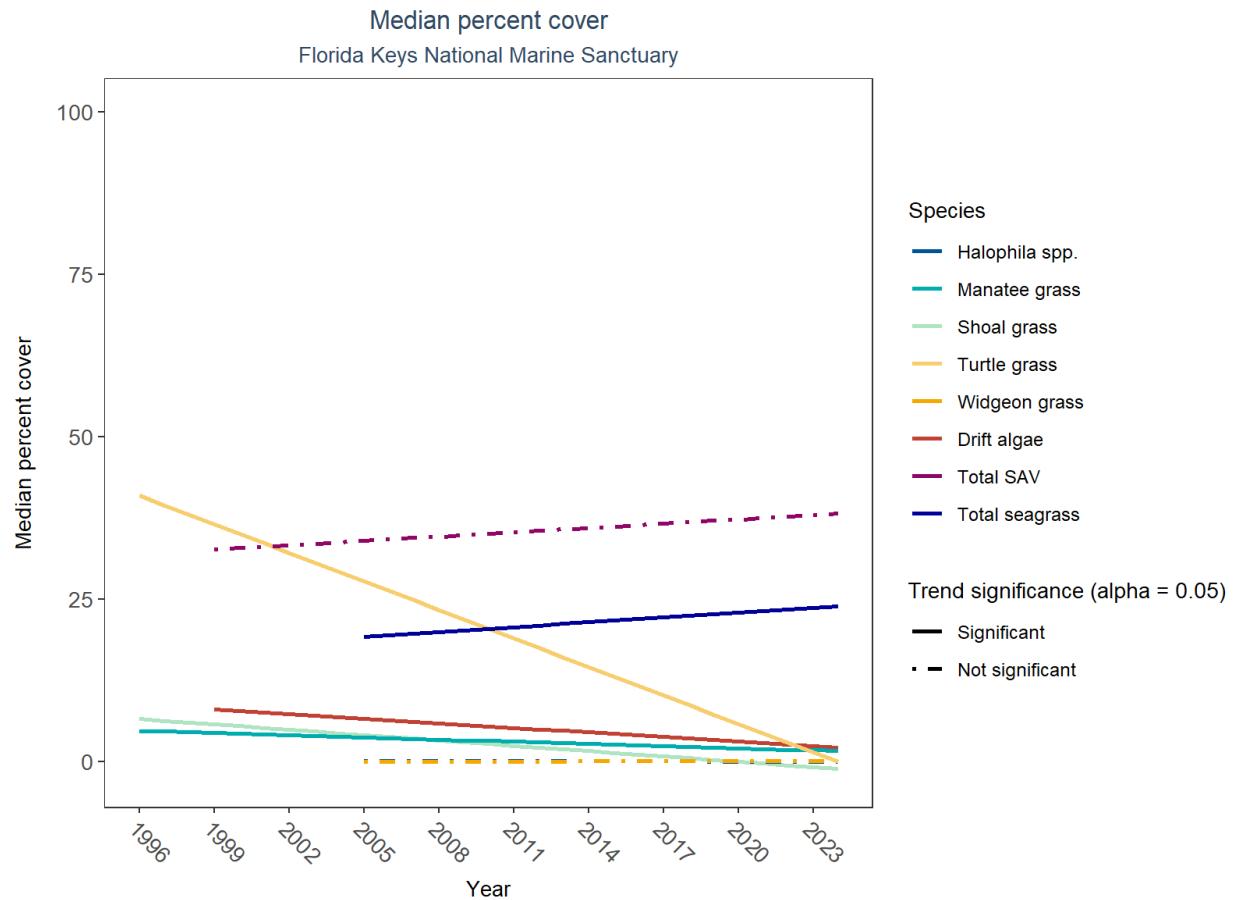
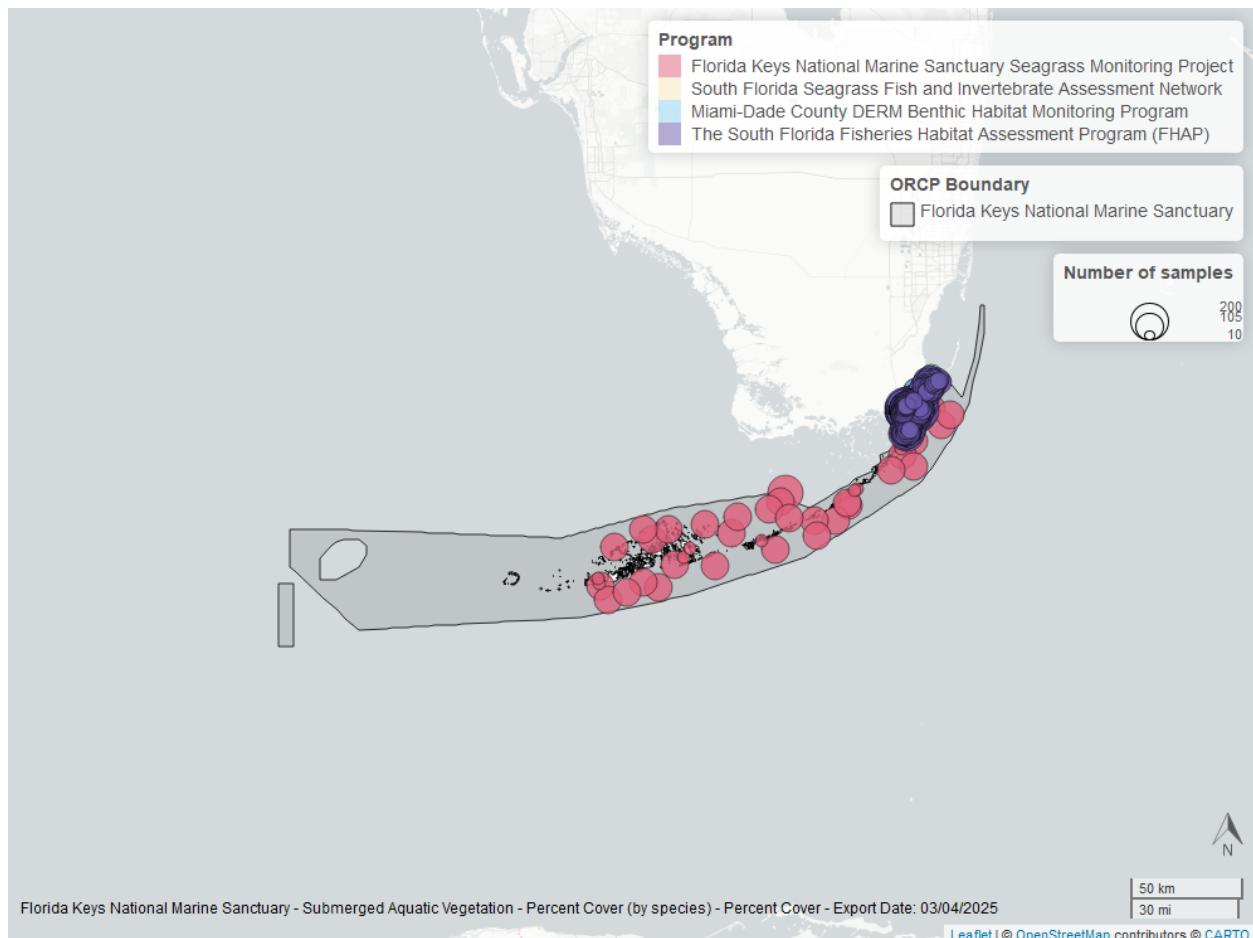


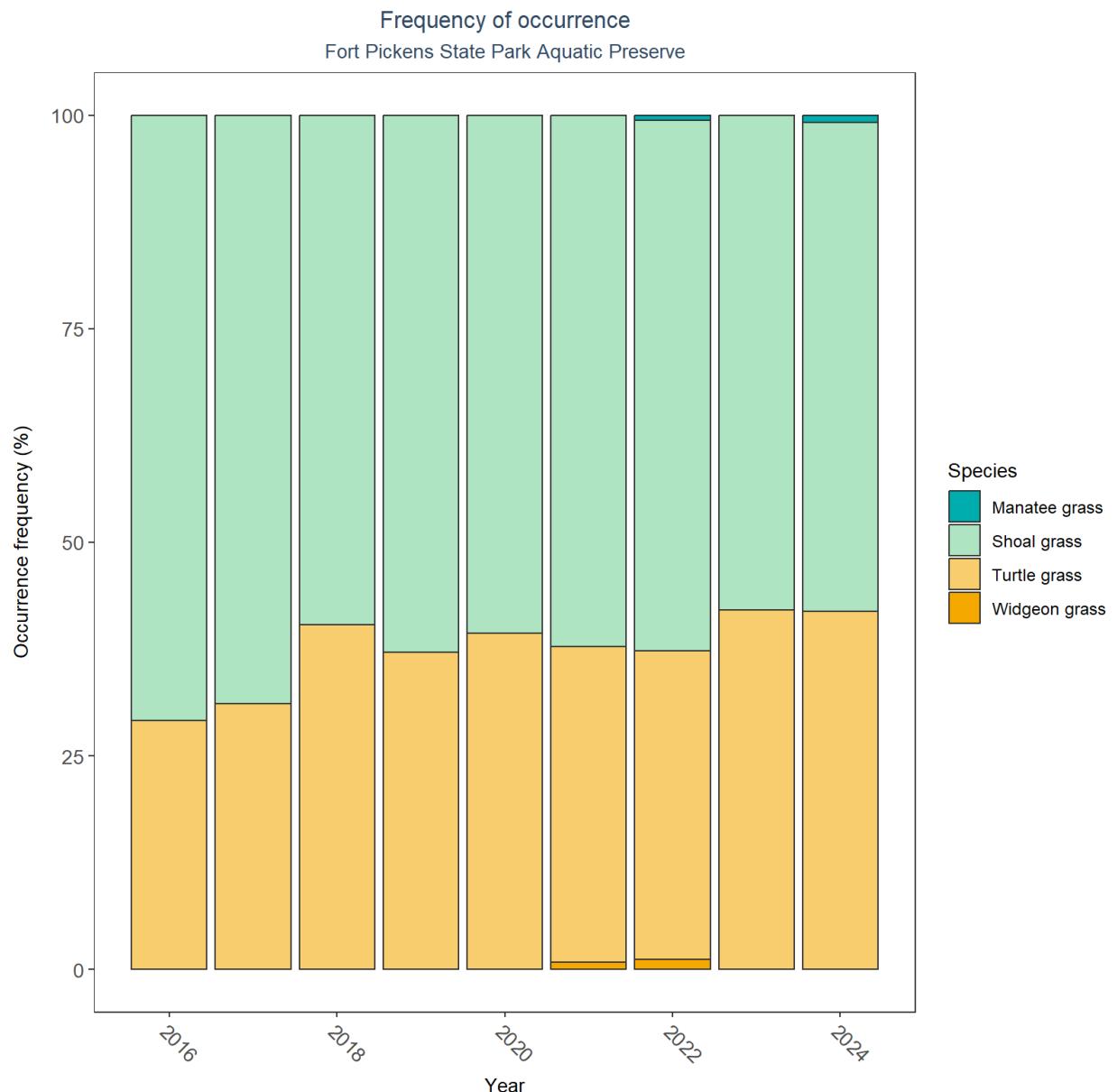
Table 11: SAV LME Results for Florida Keys National Marine Sanctuary

Species	Statistical Trend	Period of Record	LME Intercept	LME Slope	p
Attached algae	No significant trend	2008 - 2024	0.08	0.00	0.22
Drift algae	Significantly decreasing trend	1999 - 2024	9.15	-0.23	0.00
Shoal grass	Significantly decreasing trend	1996 - 2024	7.08	-0.27	0.00
Halophila spp.	No significant trend	2005 - 2024	0.07	0.00	0.33
Widgeon grass	No significant trend	2005 - 2024	-0.04	0.00	0.10
Manatee grass	Significantly decreasing trend	1996 - 2024	4.92	-0.11	0.02
Turtle grass	Significantly decreasing trend	1996 - 2024	43.82	-1.46	0.00
Total SAV	No significant trend	1999 - 2024	31.53	0.22	0.17
Total seagrass	Significantly increasing trend	2005 - 2024	16.41	0.25	0.01





Fort Pickens State Park Aquatic Preserve



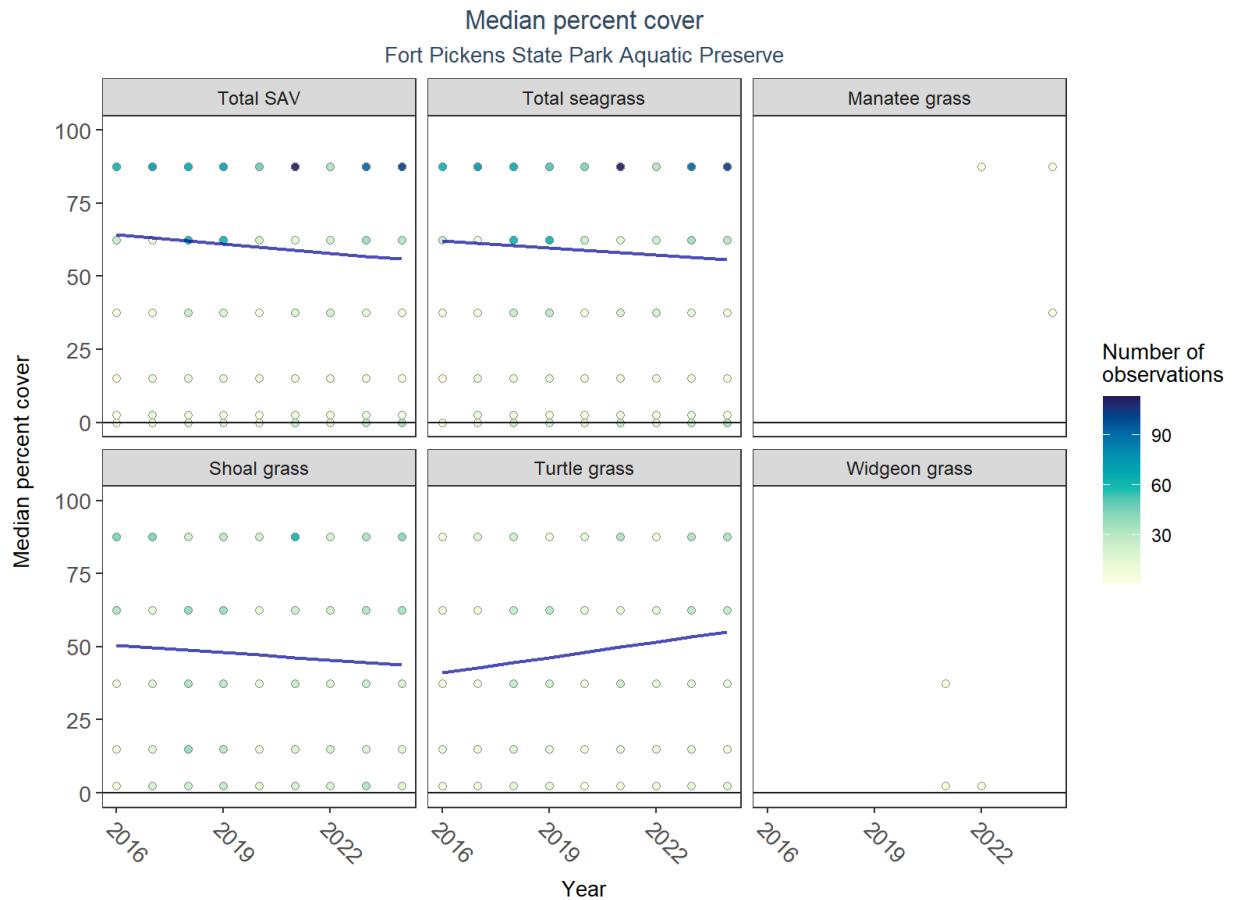
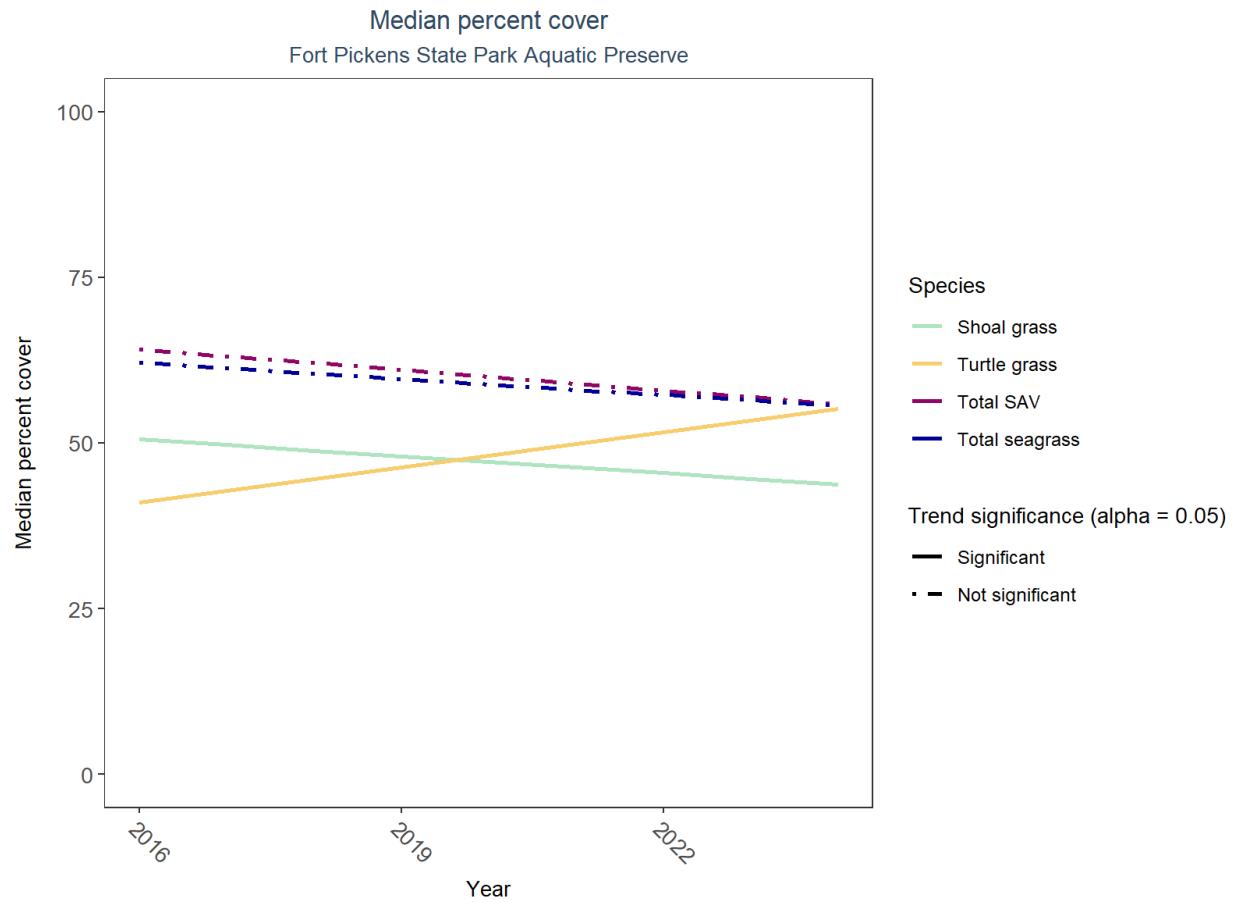
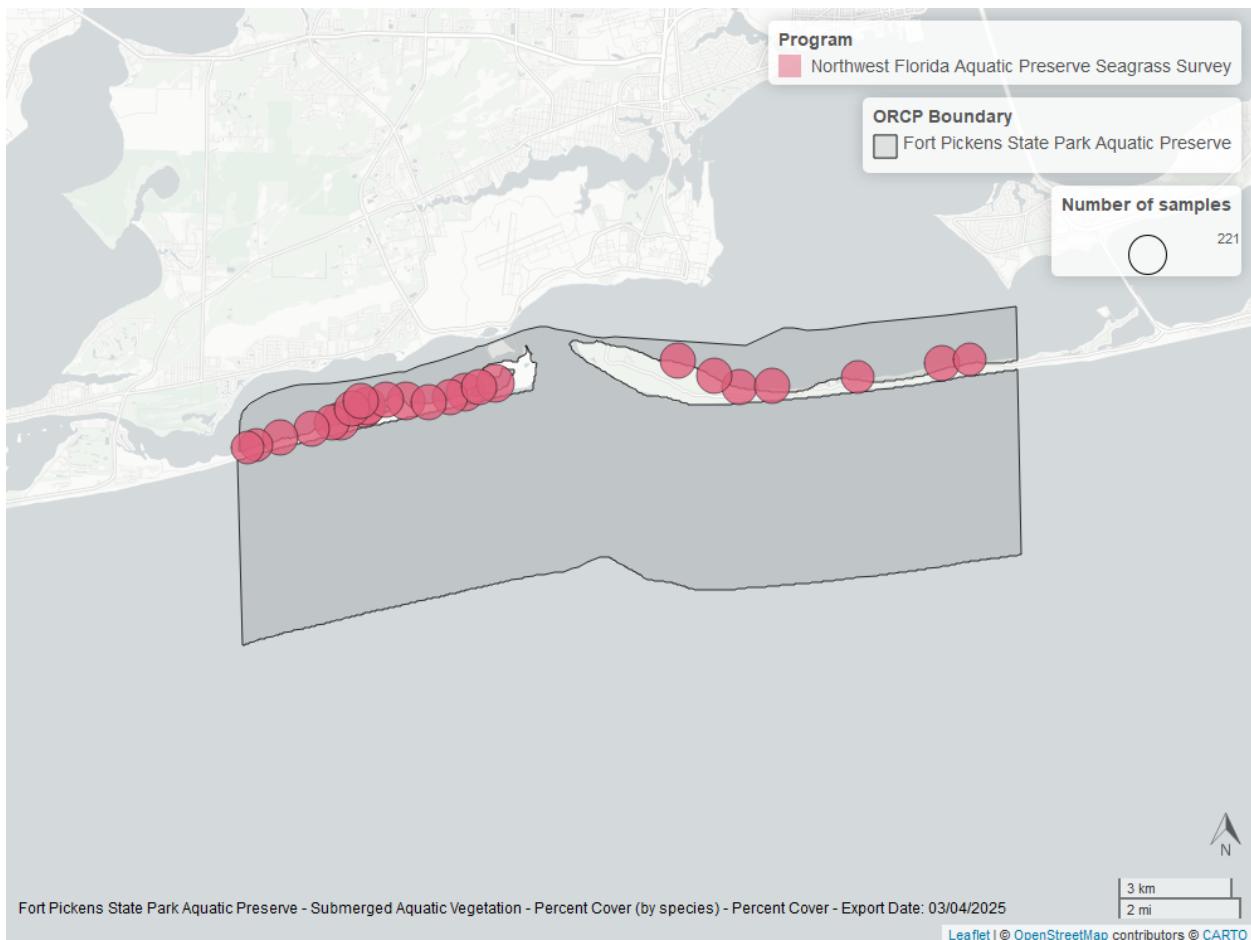


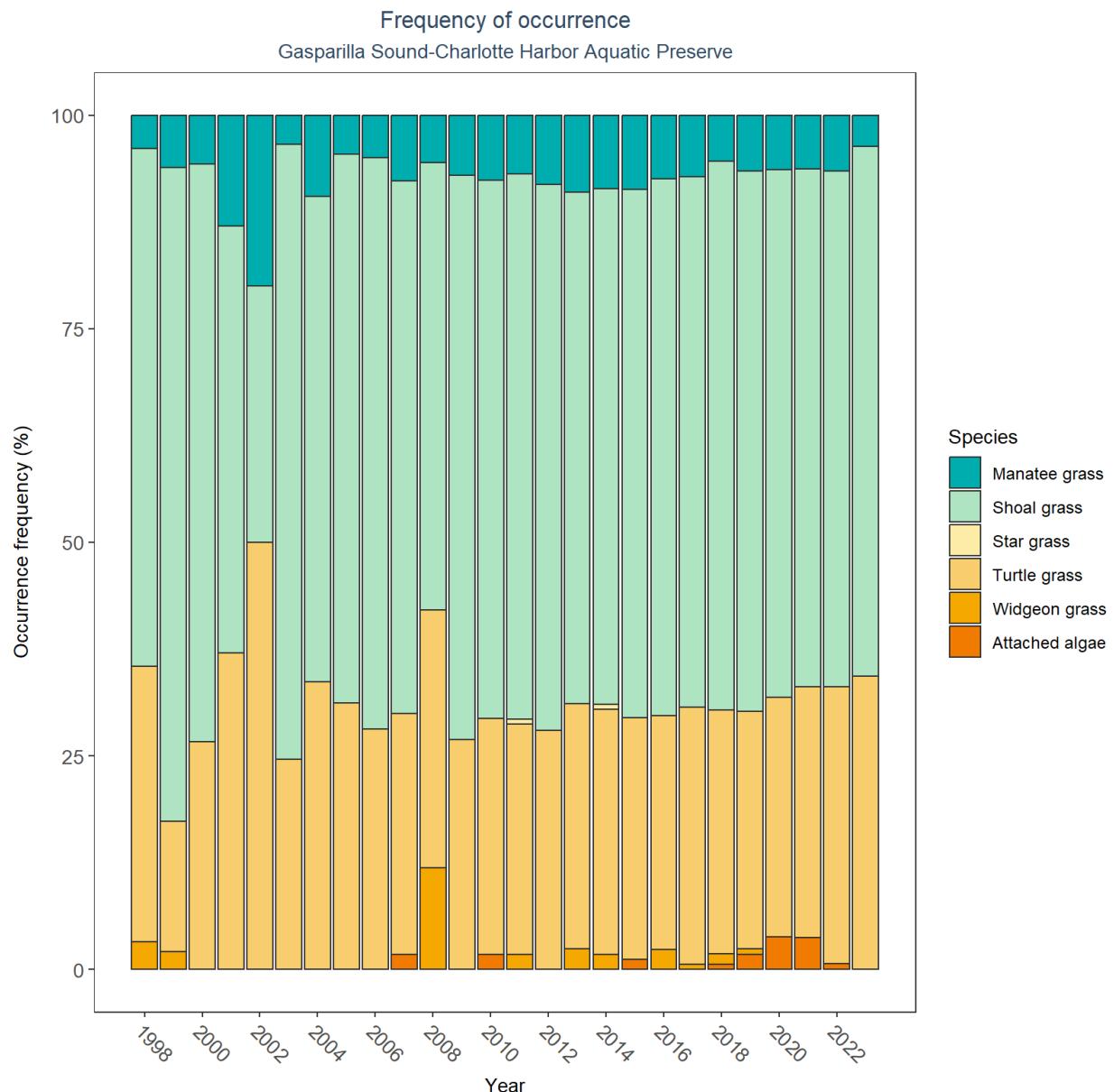
Table 12: SAV LME Results for Fort Pickens State Park Aquatic Preserve

Species	Statistical Trend	Period of Record	LME Intercept	LME Slope	p
Shoal grass	Significantly decreasing trend	2016 - 2024	69.27	-0.85	0.05
No grass in quadrat	Model did not fit the available data	-	-	-	-
Widgeon grass	Insufficient data to calculate trend	-	-	-	-
Manatee grass	Insufficient data to calculate trend	-	-	-	-
Turtle grass	Significantly increasing trend	2016 - 2024	2.35	1.76	0.01
Total SAV	No significant trend	2016 - 2024	86.90	-1.03	0.14
Total seagrass	No significant trend	2016 - 2024	79.99	-0.81	0.27





Gasparilla Sound-Charlotte Harbor Aquatic Preserve



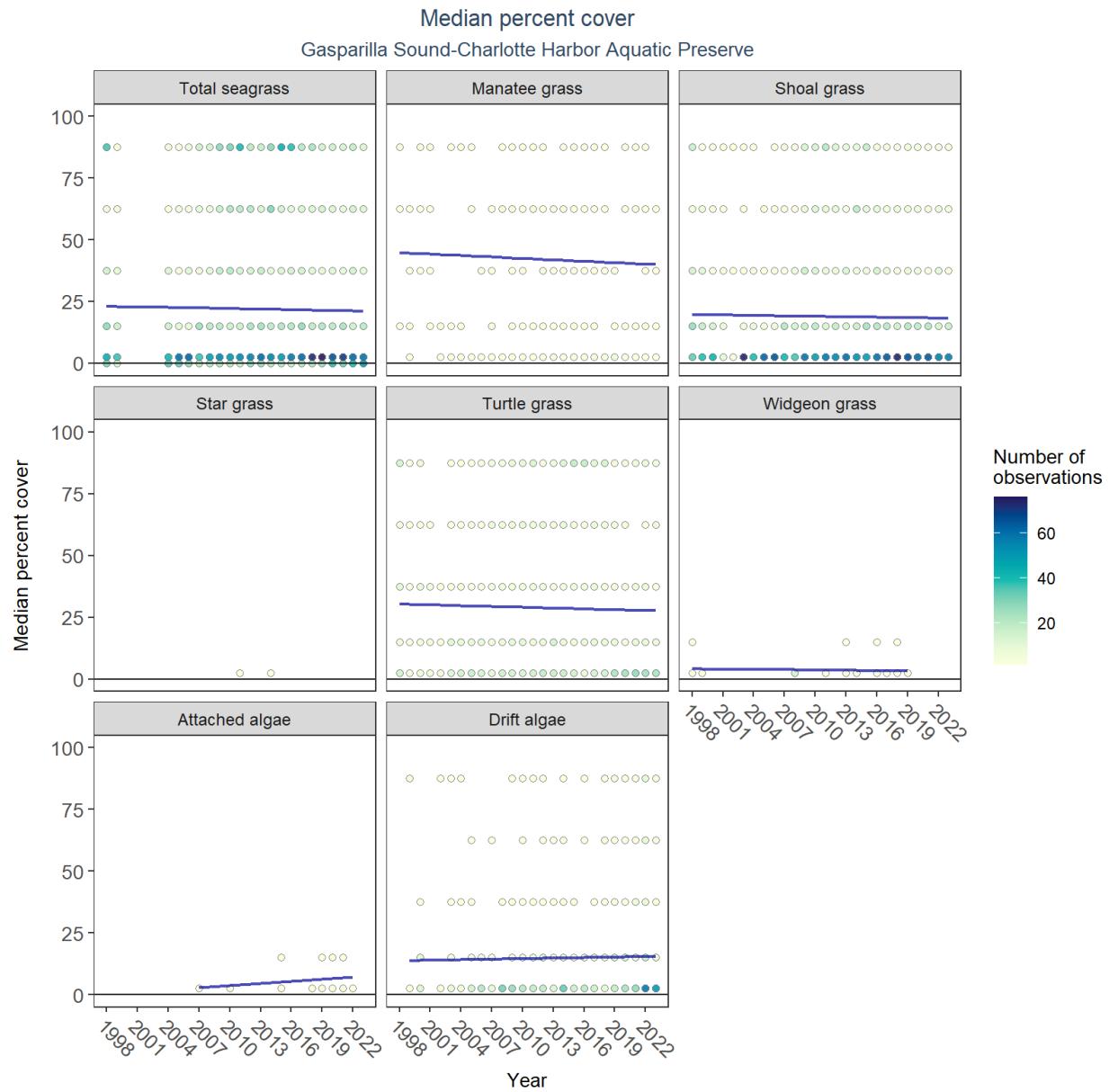
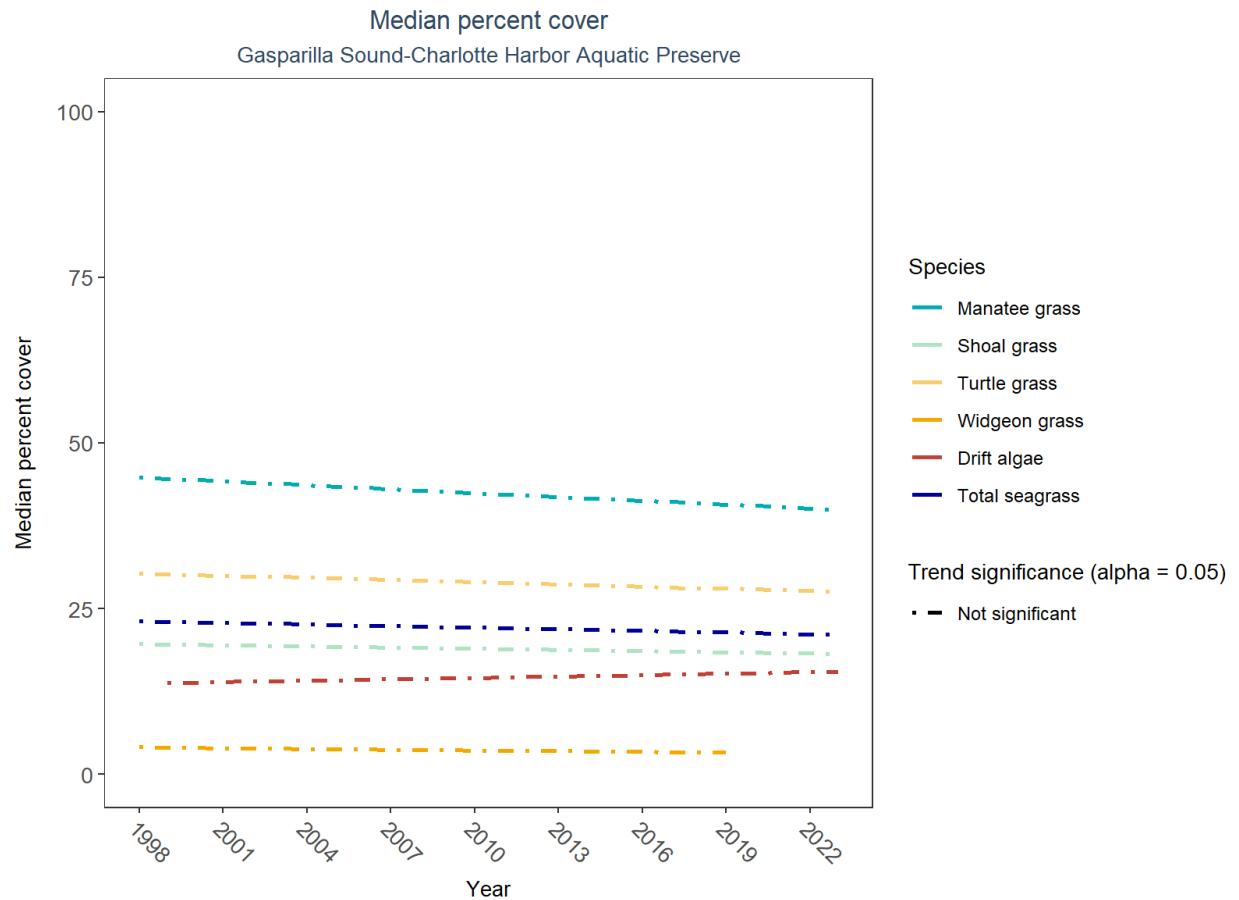
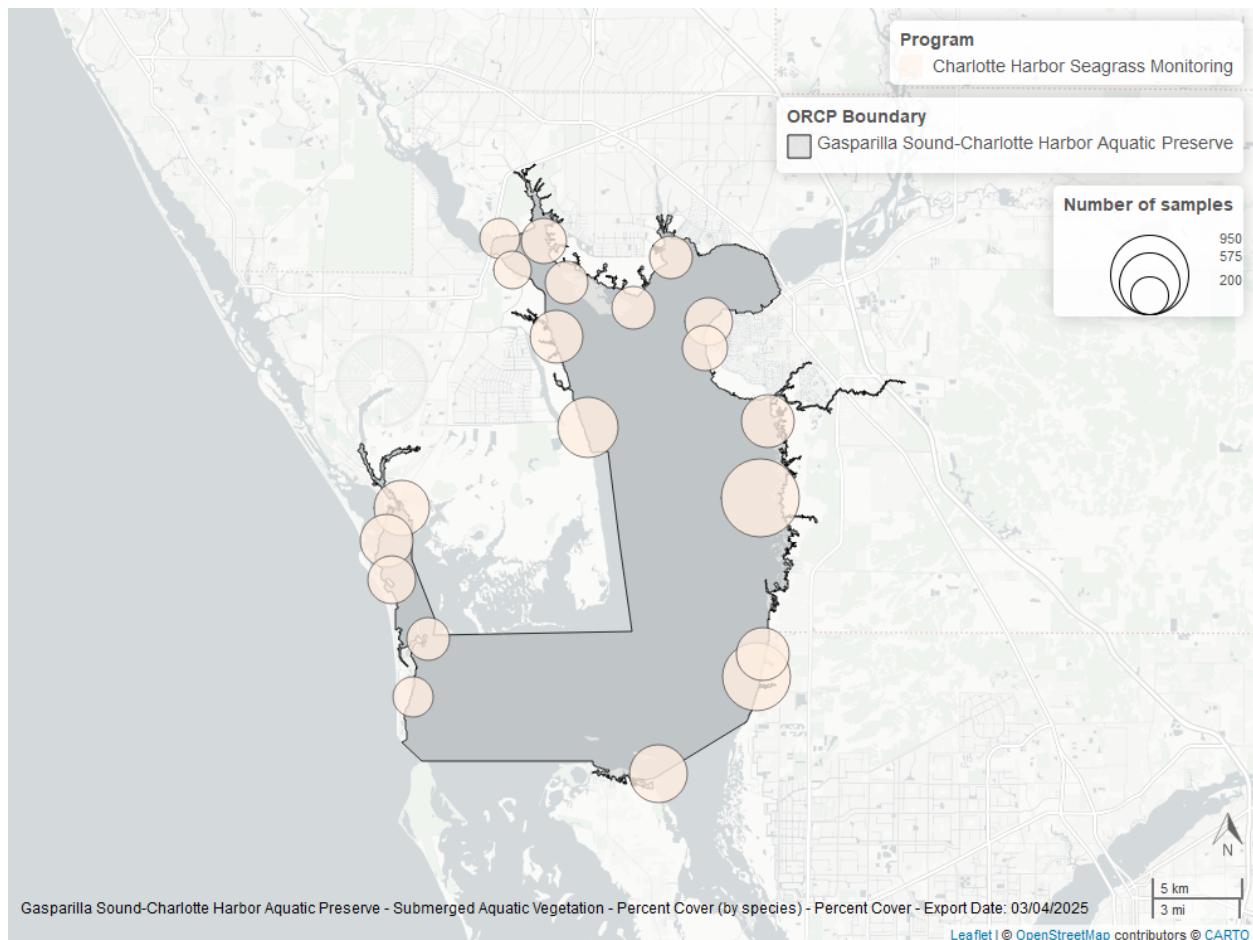


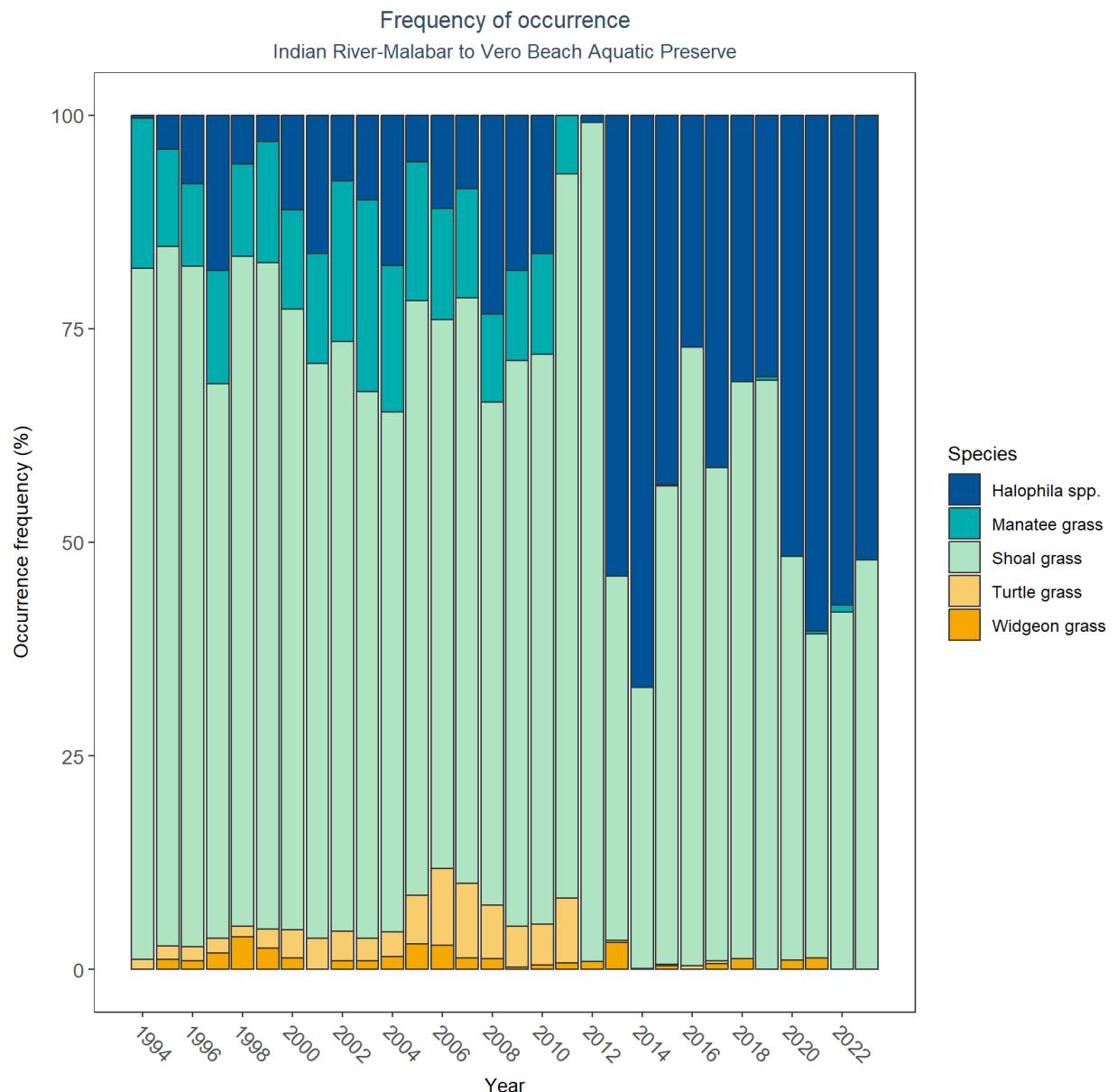
Table 13: SAV LME Results for Gasparilla Sound-Charlotte Harbor Aquatic Preserve

Species	Statistical Trend	Period of Record	LME Intercept	LME Slope	p
Attached algae	No significant trend	2007 - 2022	-0.74	0.28	0.32
Drift algae	No significant trend	1999 - 2023	13.43	0.07	0.77
Shoal grass	No significant trend	1998 - 2023	19.92	-0.06	0.44
Star grass	Insufficient data to calculate trend	-	-	-	-
No grass in quadrat	Model did not fit the available data	-	-	-	-
Widgeon grass	No significant trend	1998 - 2019	4.26	-0.04	0.80
Manatee grass	No significant trend	1998 - 2023	45.59	-0.20	0.74
Turtle grass	No significant trend	1998 - 2023	30.78	-0.11	0.57
Total seagrass	No significant trend	1998 - 2023	23.46	-0.08	0.29





Indian River-Malabar to Vero Beach Aquatic Preserve



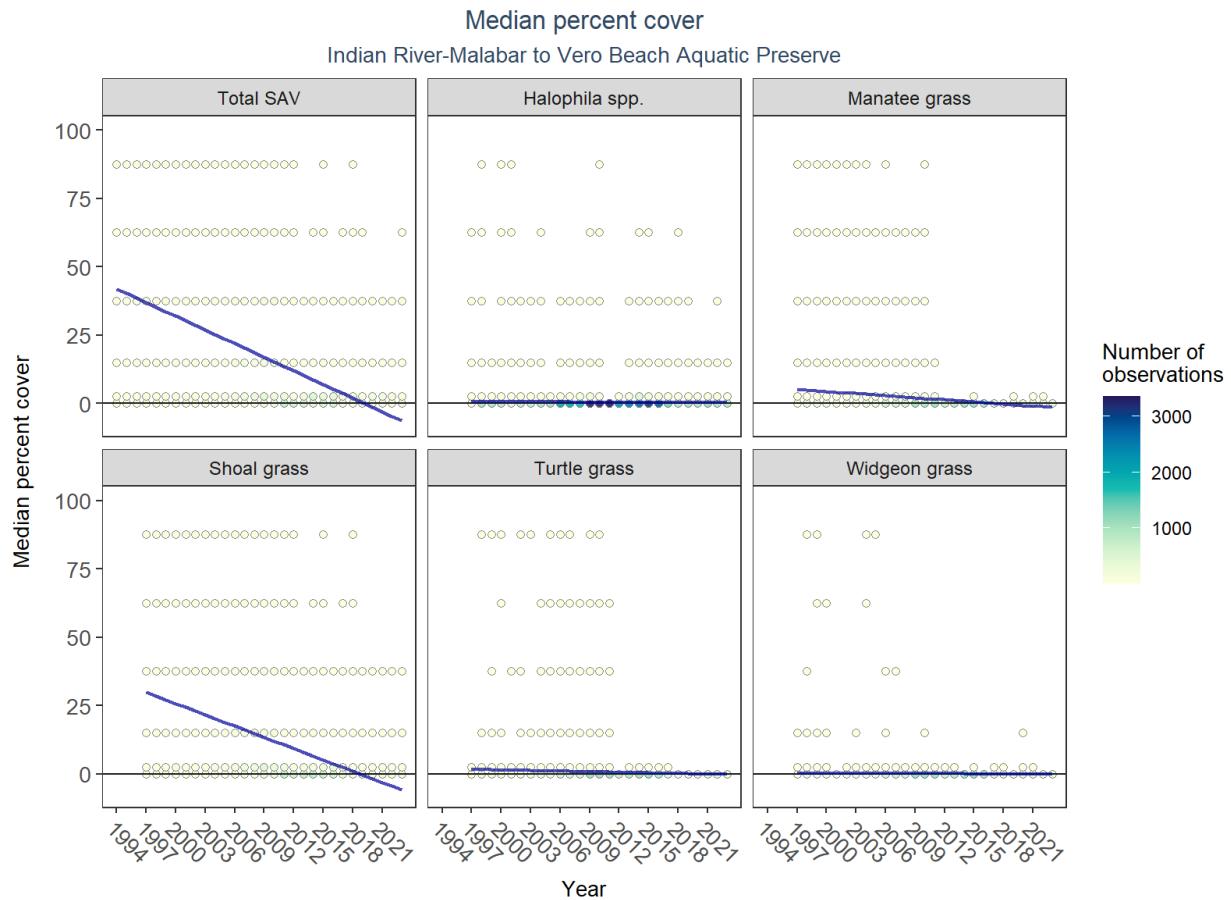
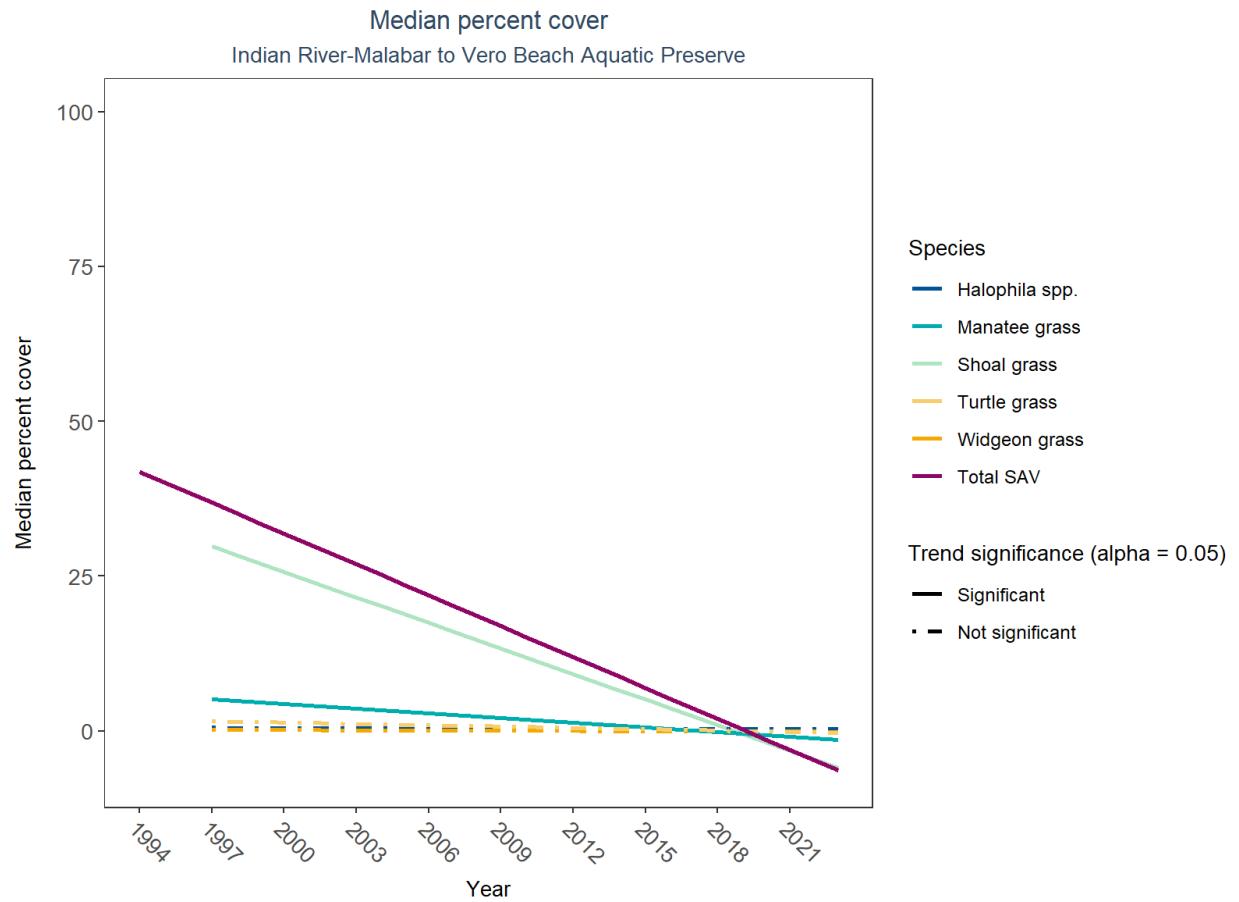
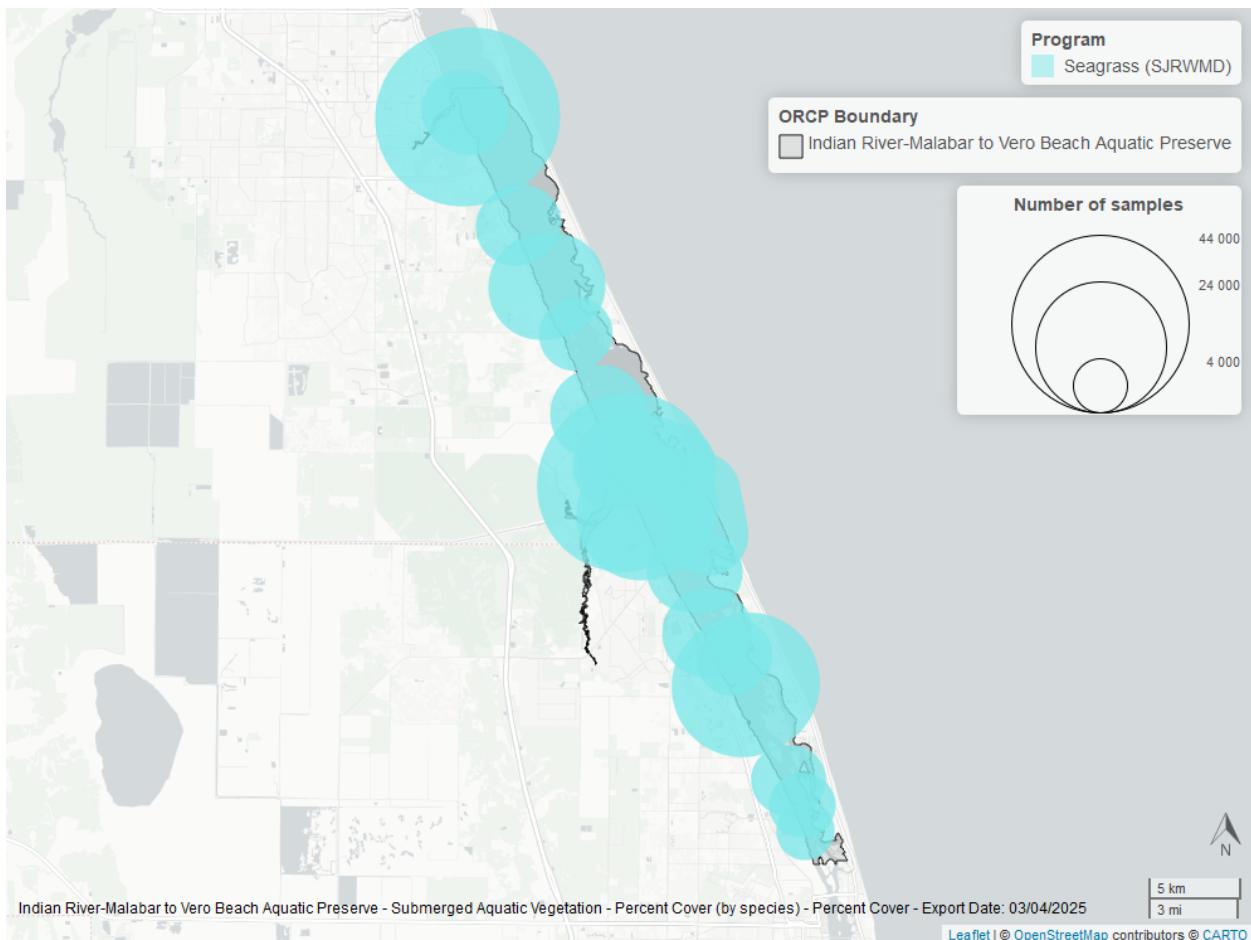


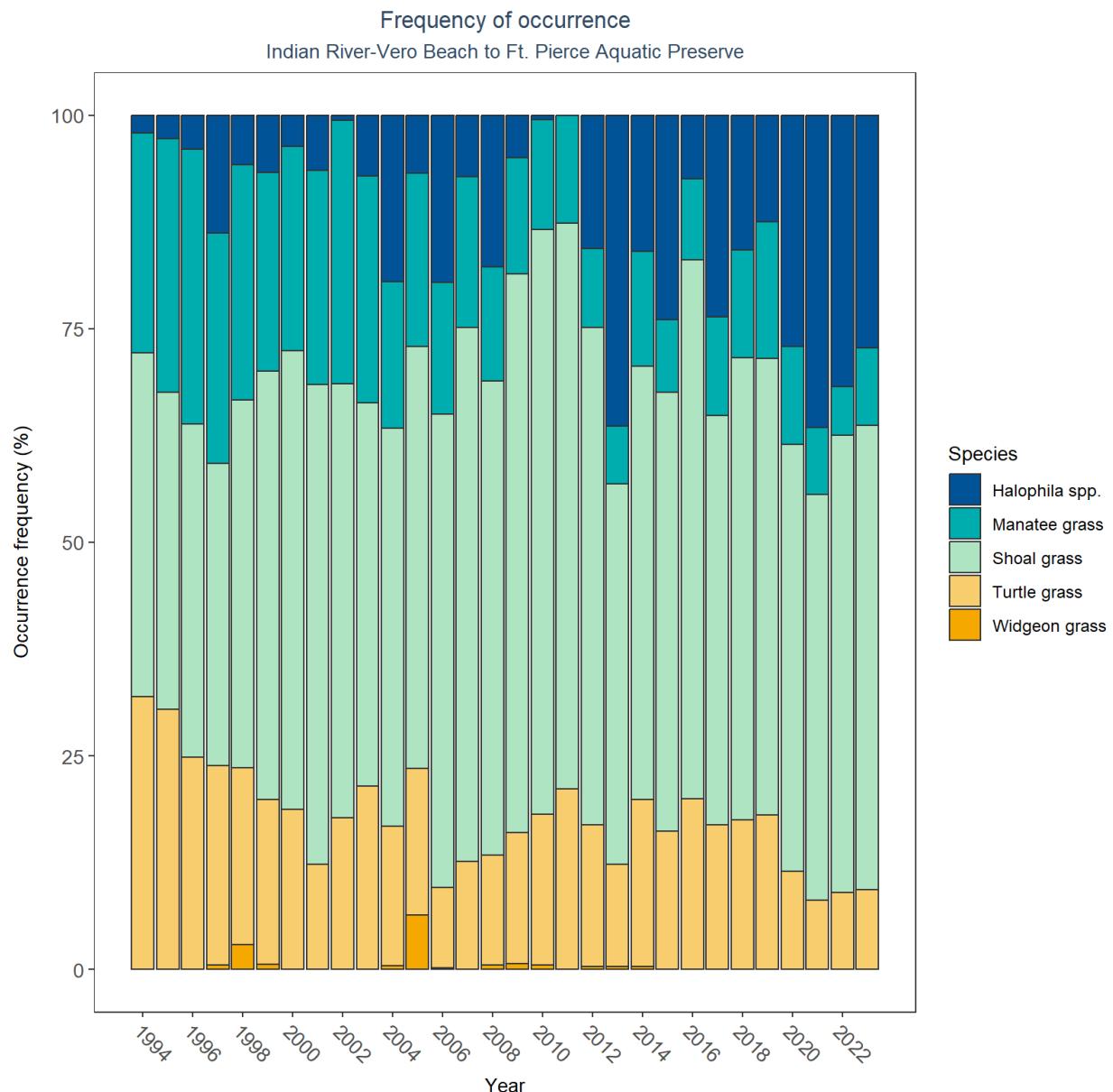
Table 14: SAV LME Results for Indian River-Malabar to Vero Beach Aquatic Preserve

Species	Statistical Trend	Period of Record	LME Intercept	LME Slope	p
Drift algae	Insufficient data to calculate trend	-	-	-	-
Shoal grass	Significantly decreasing trend	1997 - 2023	33.96	-1.37	0.00
Halophila spp.	No significant trend	1997 - 2023	0.57	-0.01	0.36
Widgeon grass	No significant trend	1997 - 2023	0.26	-0.01	0.10
Manatee grass	Significantly decreasing trend	1997 - 2023	5.90	-0.25	0.00
Turtle grass	No significant trend	1997 - 2023	1.81	-0.07	0.10
Total SAV	Significantly decreasing trend	1994 - 2023	41.89	-1.66	0.00
Total seagrass	Insufficient data to calculate trend	-	-	-	-





Indian River-Vero Beach to Ft. Pierce Aquatic Preserve



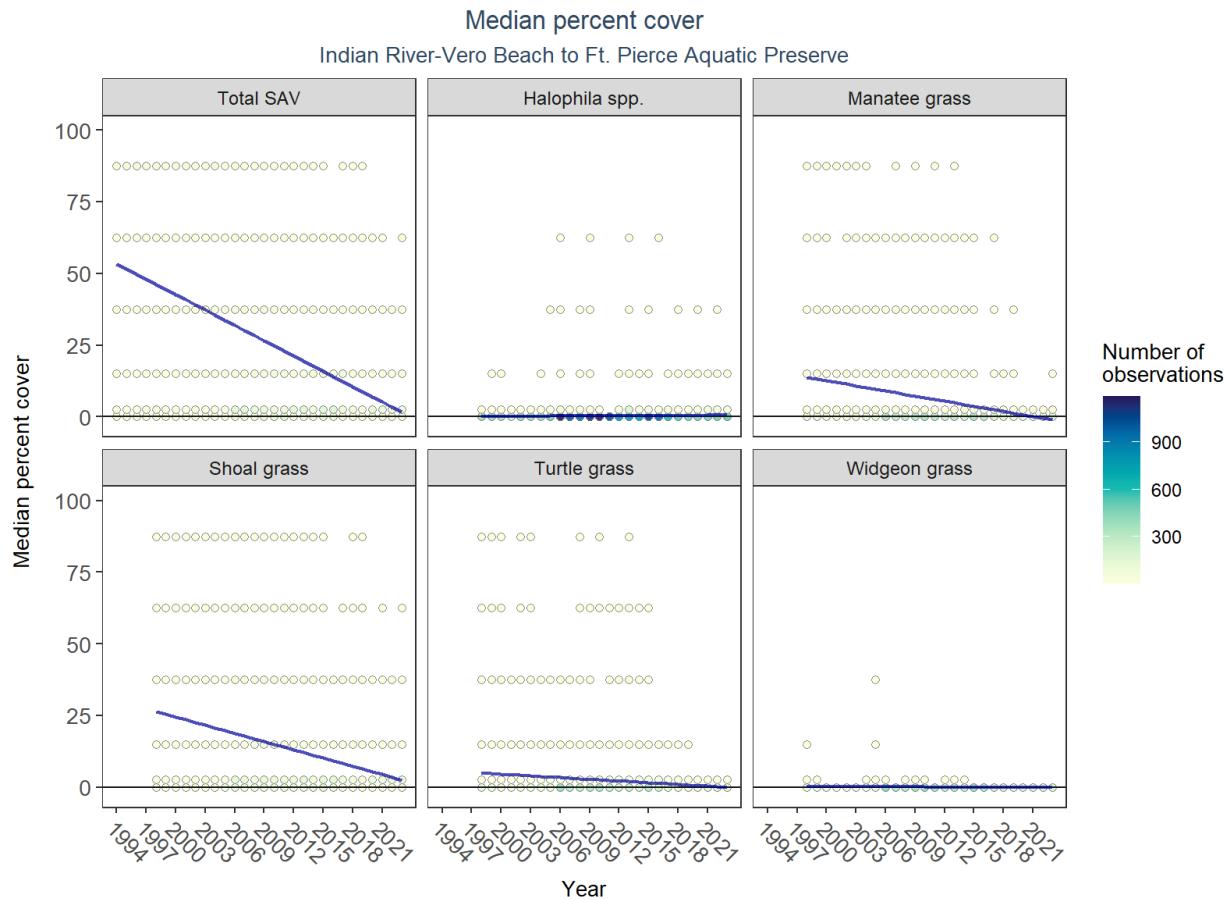
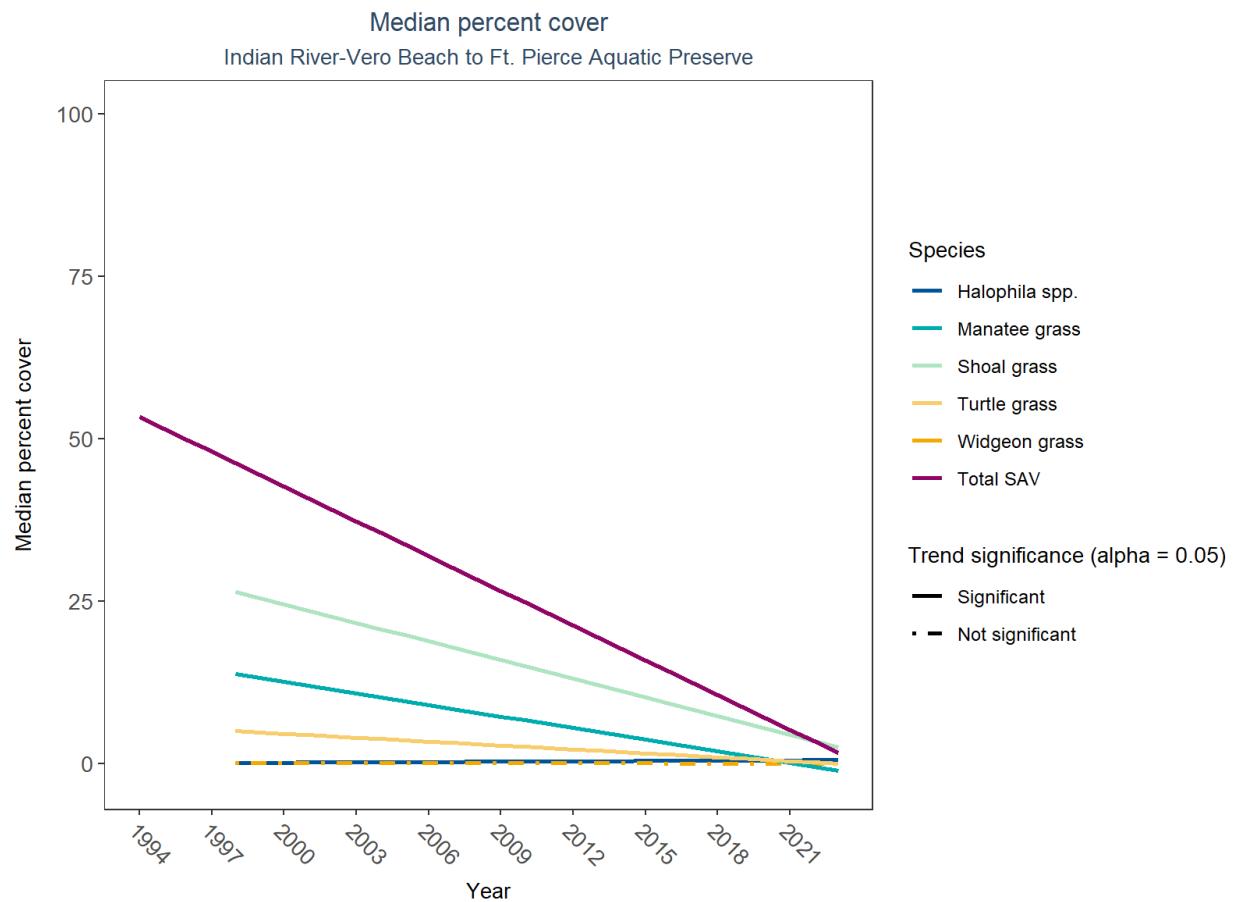
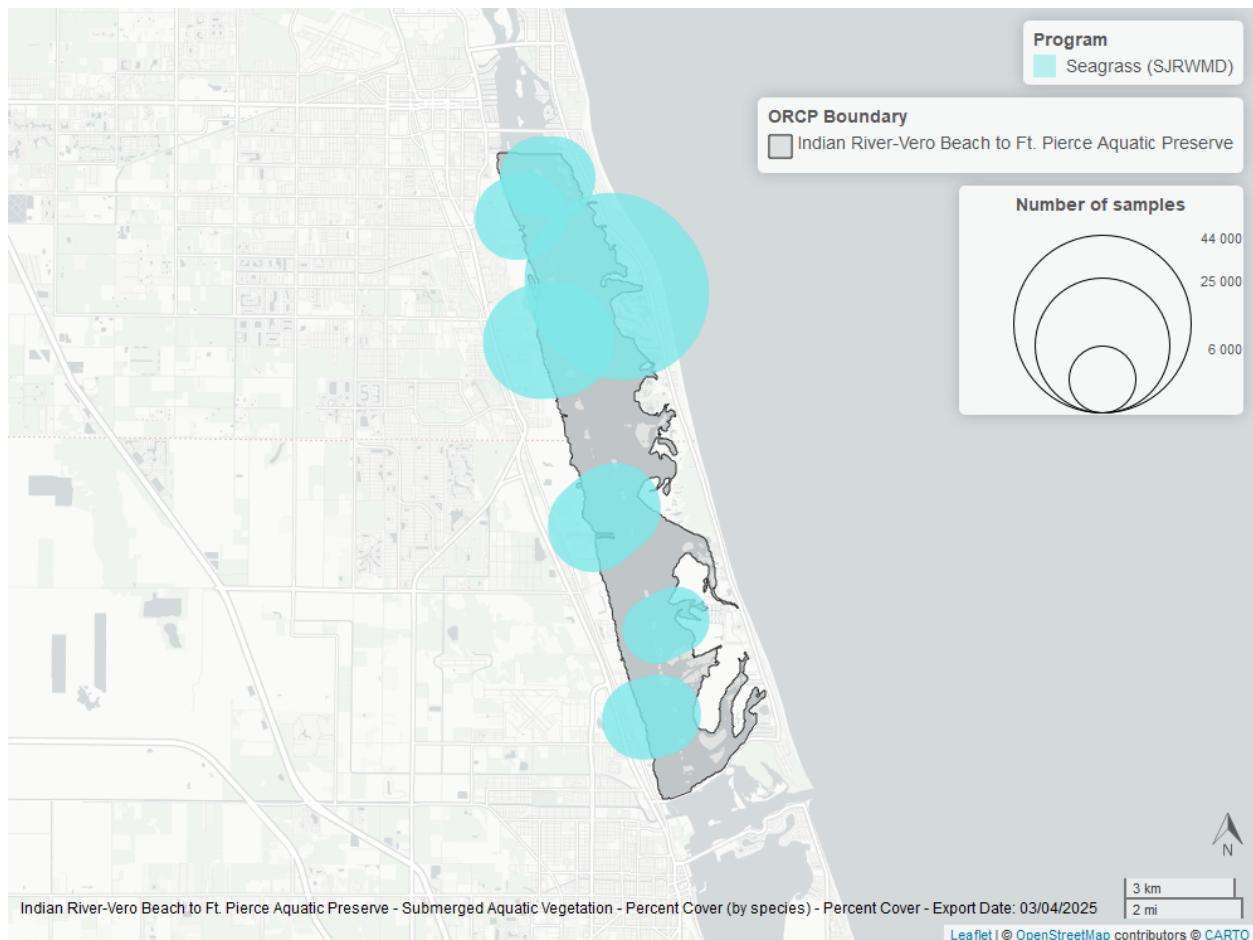


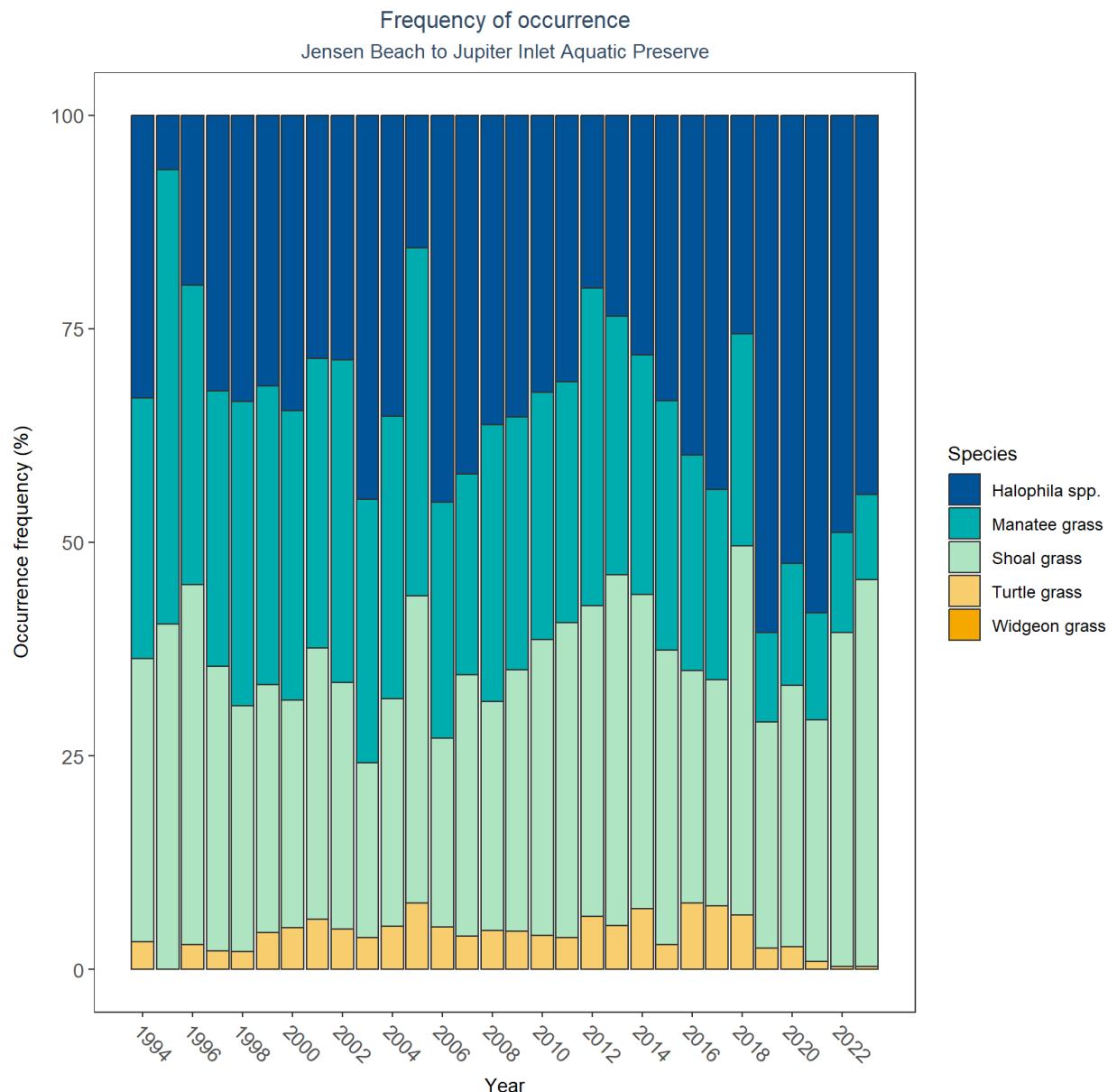
Table 15: SAV LME Results for Indian River-Vero Beach to Ft. Pierce Aquatic Preserve

Species	Statistical Trend	Period of Record	LME Intercept	LME Slope	p
Drift algae	Insufficient data to calculate trend	-	-	-	-
Shoal grass	Significantly decreasing trend	1998 - 2023	30.26	-0.96	0.00
Halophila spp.	Significantly increasing trend	1998 - 2023	0.04	0.02	0.03
Widgeon grass	No significant trend	1998 - 2023	0.14	-0.01	0.12
Manatee grass	Significantly decreasing trend	1998 - 2023	16.15	-0.59	0.04
Turtle grass	Significantly decreasing trend	1998 - 2023	5.77	-0.20	0.02
Total SAV	Significantly decreasing trend	1994 - 2023	53.32	-1.78	0.00
Total seagrass	Insufficient data to calculate trend	-	-	-	-





Jensen Beach to Jupiter Inlet Aquatic Preserve



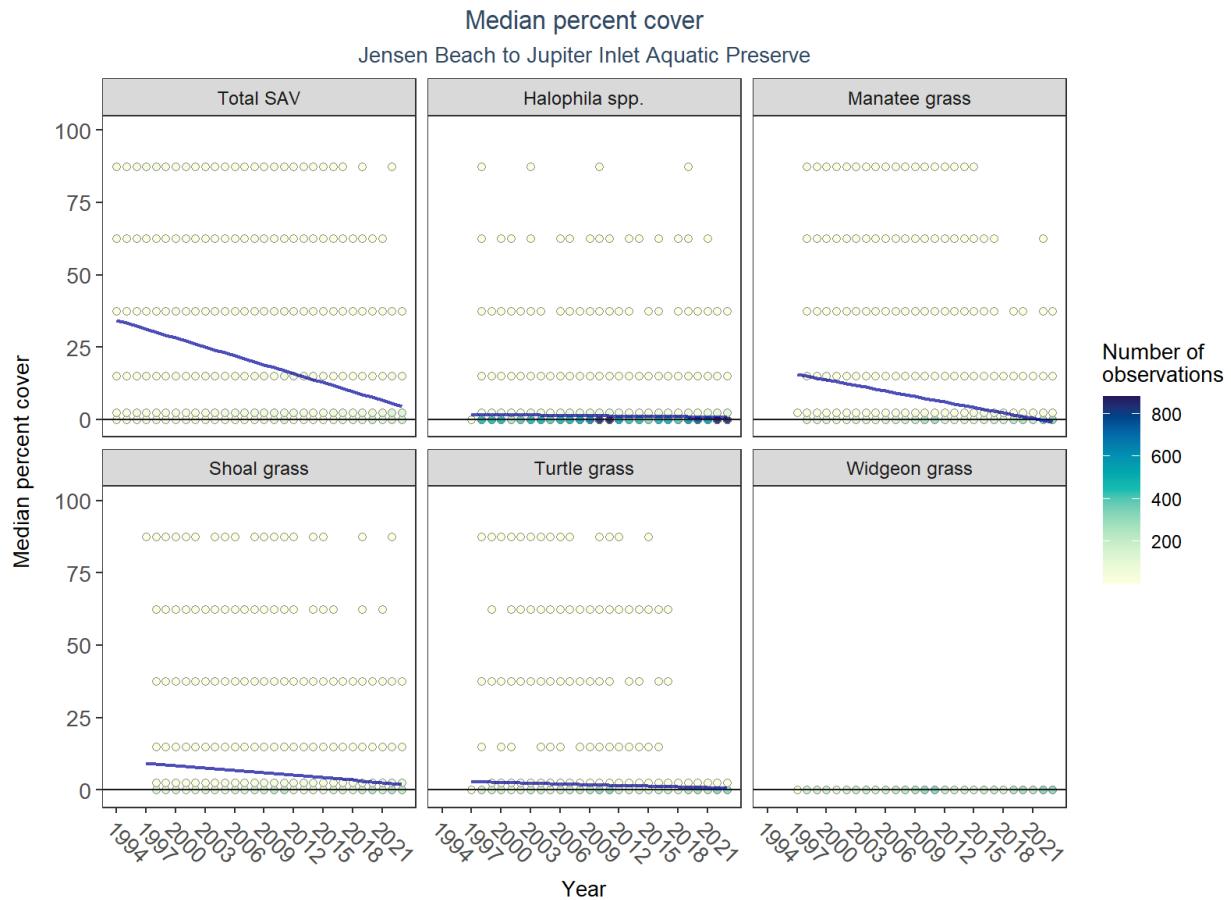
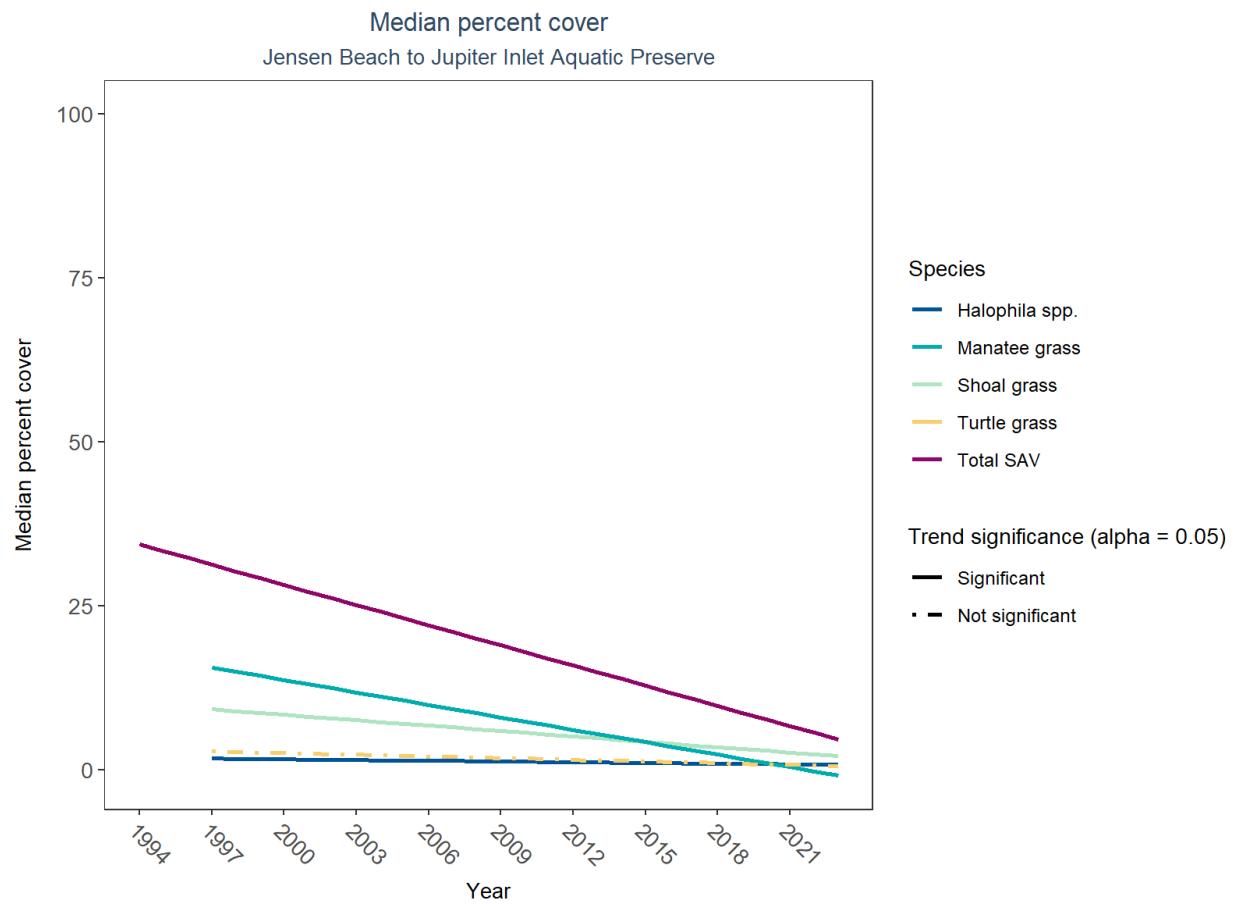
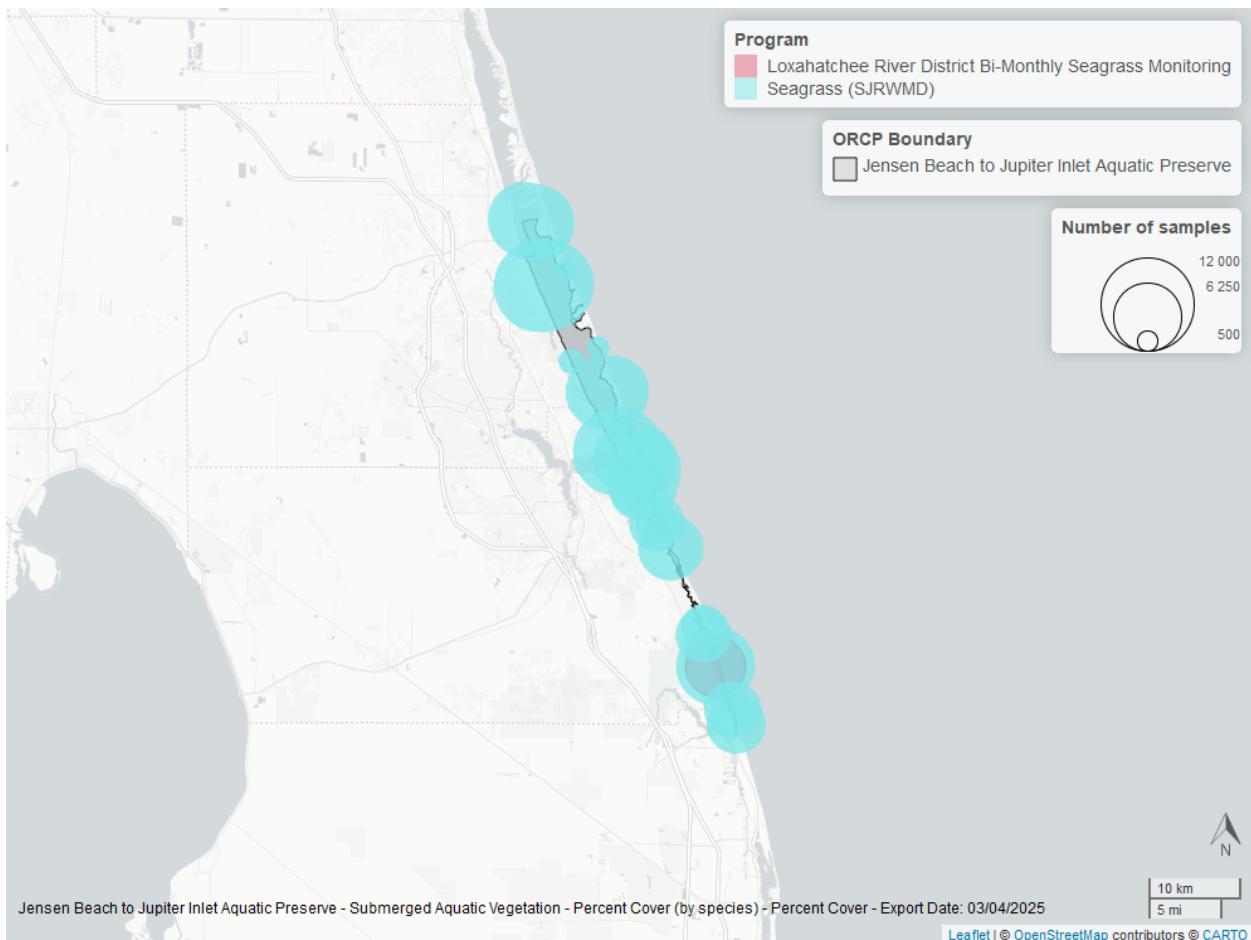


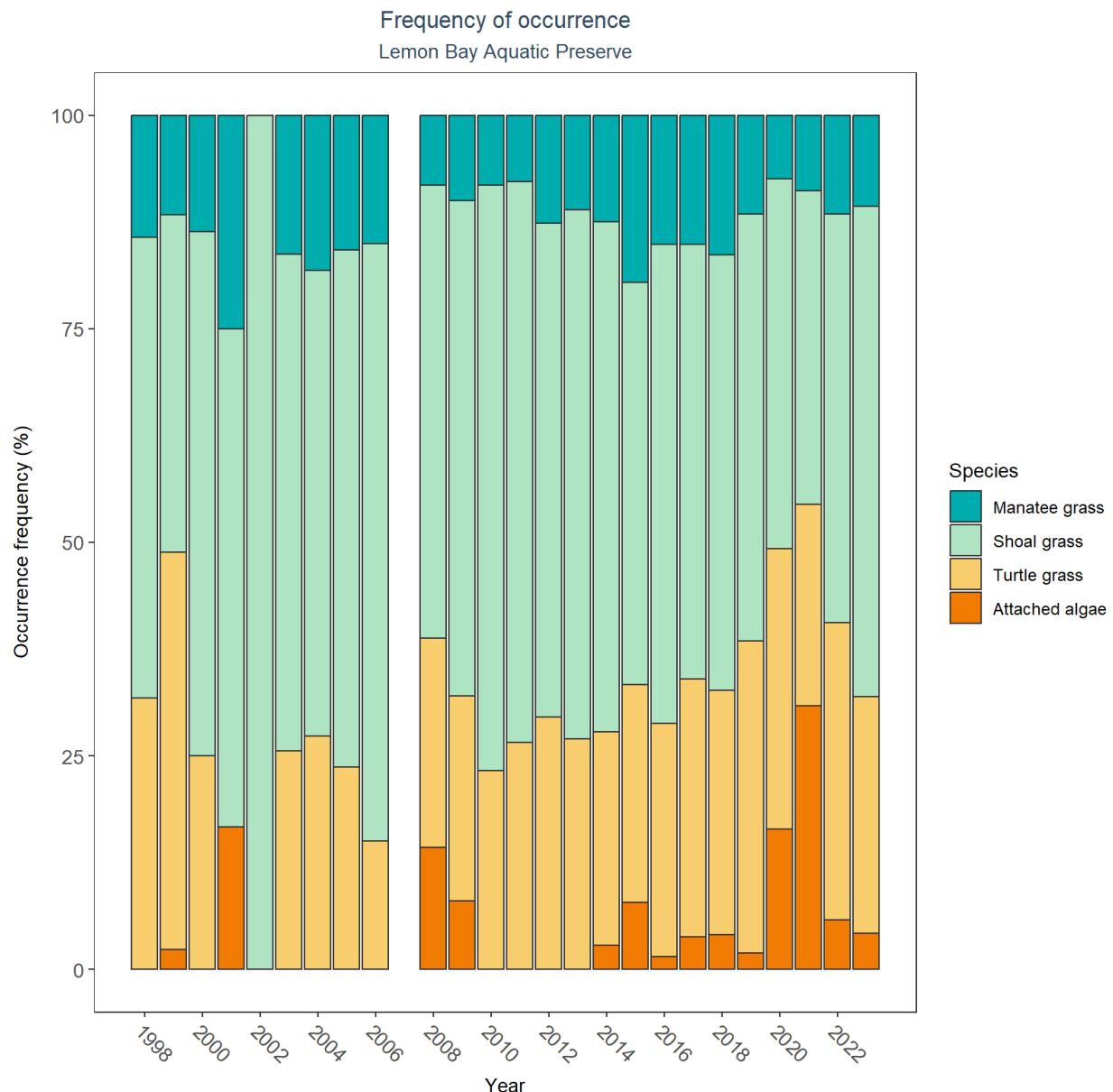
Table 16: SAV LME Results for Jensen Beach to Jupiter Inlet Aquatic Preserve

Species	Statistical Trend	Period of Record	LME Intercept	LME Slope	p
Drift algae	Insufficient data to calculate trend	-	-	-	-
Shoal grass	Significantly decreasing trend	1997 - 2023	10.04	-0.27	0.00
Halophila spp.	Significantly decreasing trend	1997 - 2023	1.83	-0.04	0.02
Widgeon grass	Model did not fit the available data	-	-	-	-
Manatee grass	Significantly decreasing trend	1997 - 2023	17.50	-0.63	0.00
Turtle grass	No significant trend	1997 - 2023	3.09	-0.09	0.06
Total SAV	Significantly decreasing trend	1994 - 2023	34.35	-1.02	0.00
Total seagrass	Insufficient data to calculate trend	-	-	-	-





Lemon Bay Aquatic Preserve



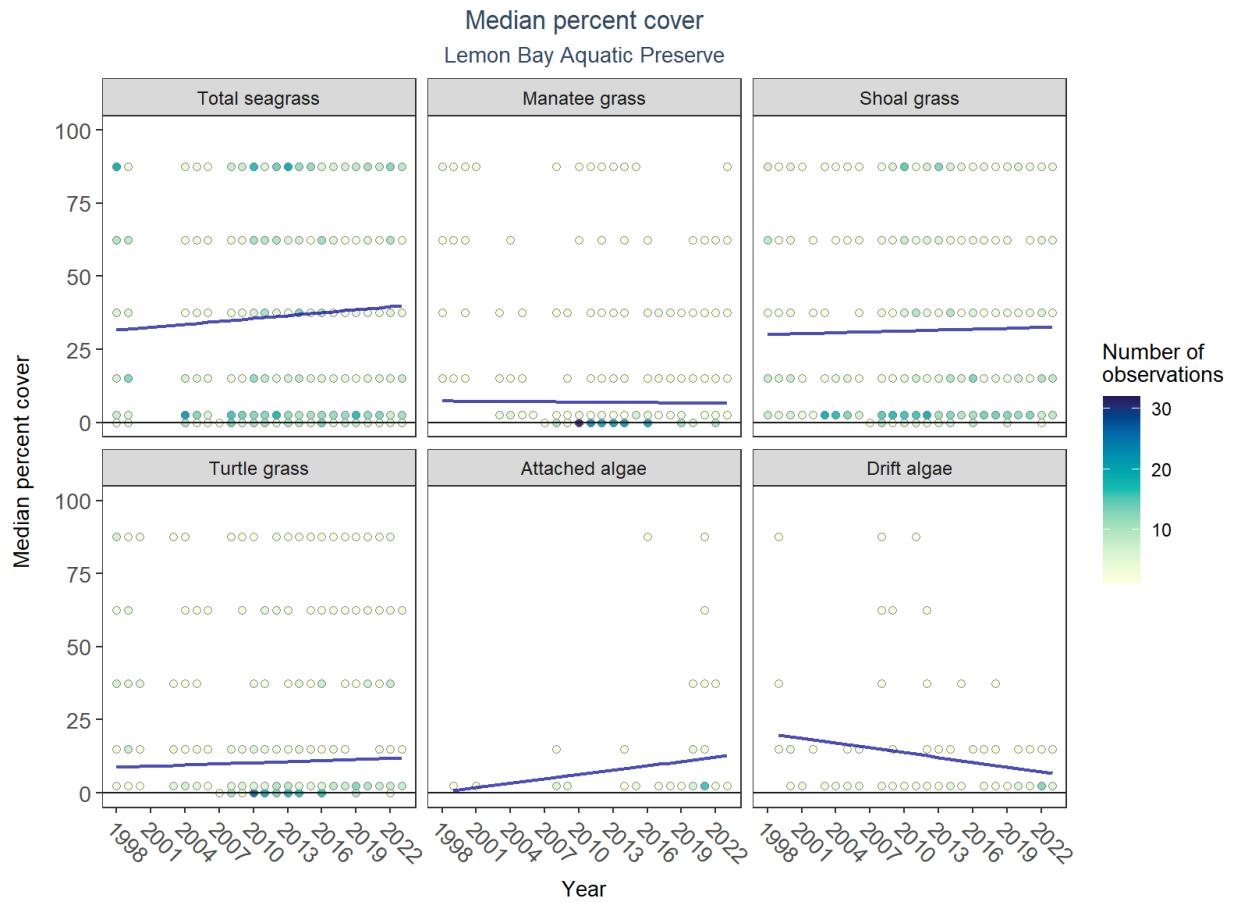
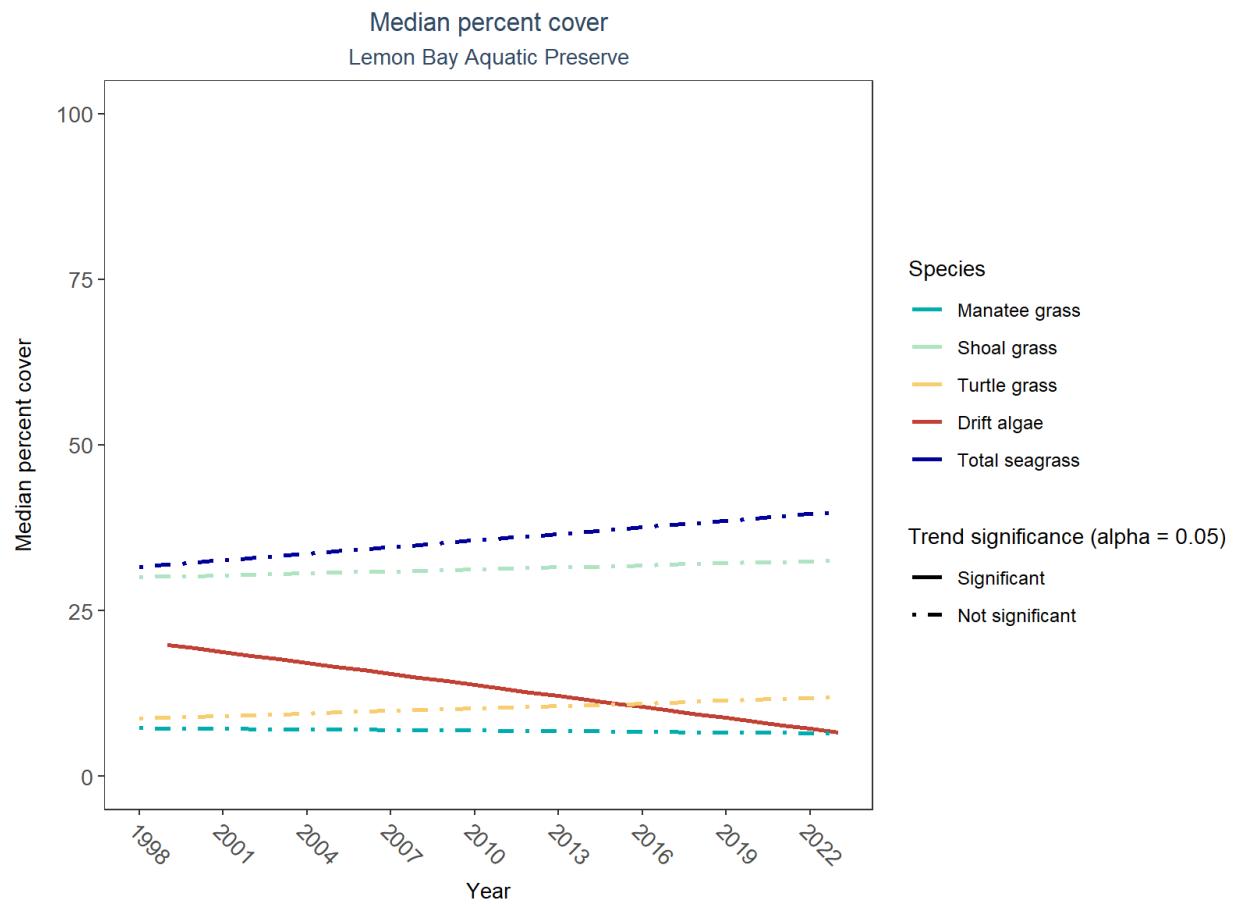
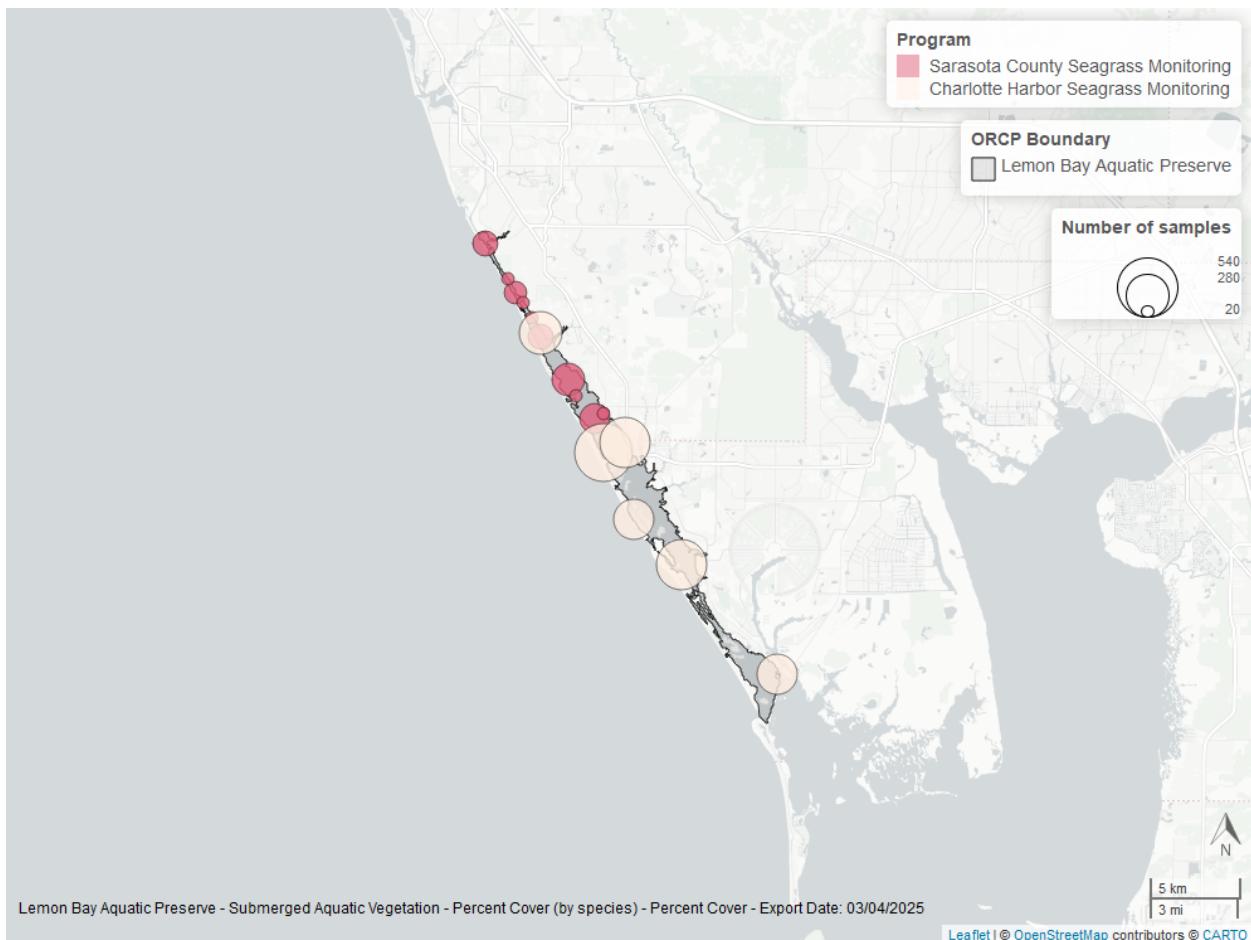


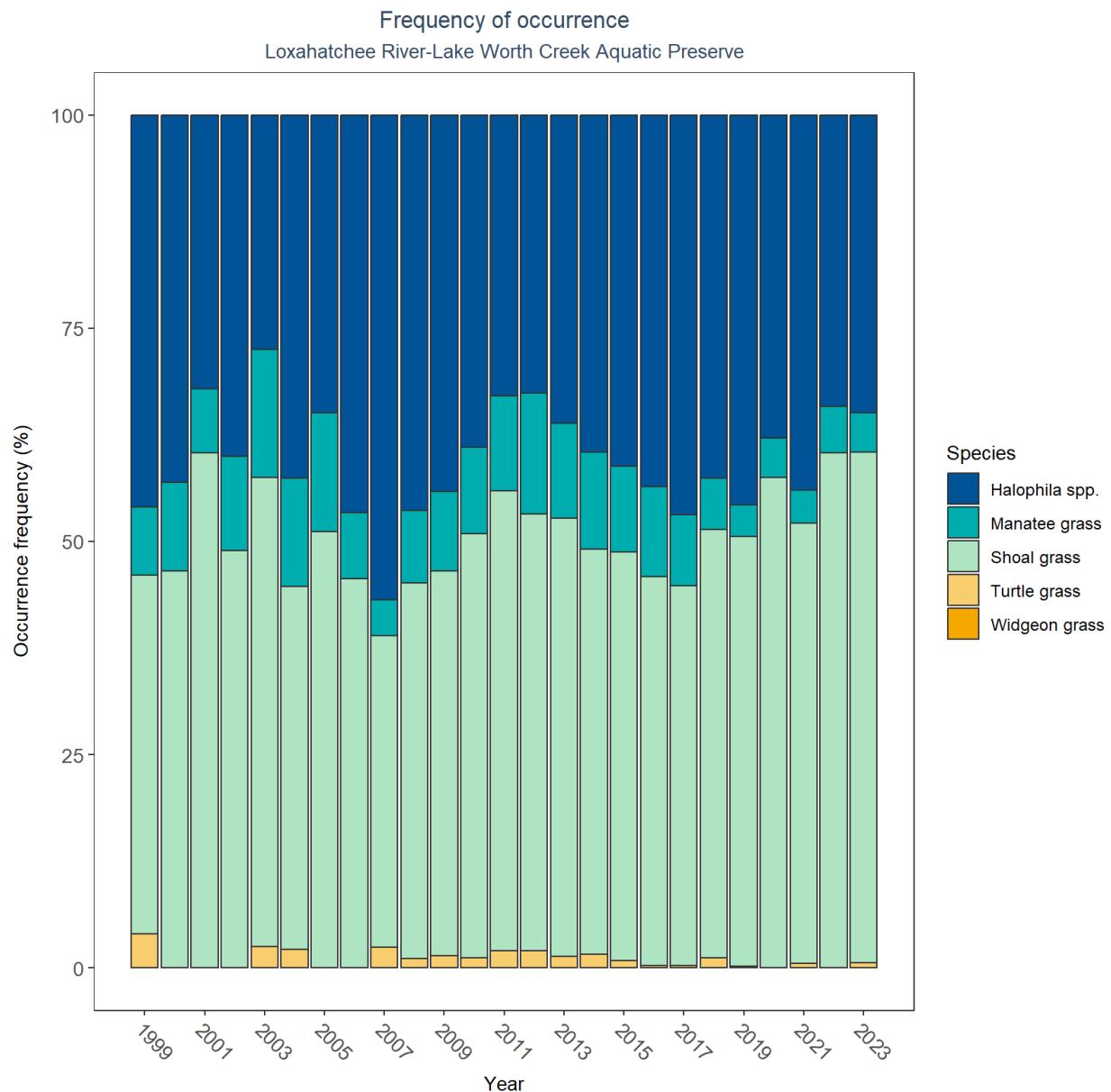
Table 17: SAV LME Results for Lemon Bay Aquatic Preserve

Species	Statistical Trend	Period of Record	LME Intercept	LME Slope	p
Attached algae	No significant trend	1999 - 2023	-1.57	0.49	0.24
Drift algae	Significantly decreasing trend	1999 - 2023	22.65	-0.55	0.02
Shoal grass	No significant trend	1998 - 2023	29.64	0.10	0.57
No grass in quadrat	Model did not fit the available data	-	-	-	-
Manatee grass	No significant trend	1998 - 2023	7.42	-0.03	0.91
Turtle grass	No significant trend	1998 - 2023	8.24	0.13	0.79
Total seagrass	No significant trend	1998 - 2023	30.28	0.33	0.39





Loxahatchee River-Lake Worth Creek Aquatic Preserve



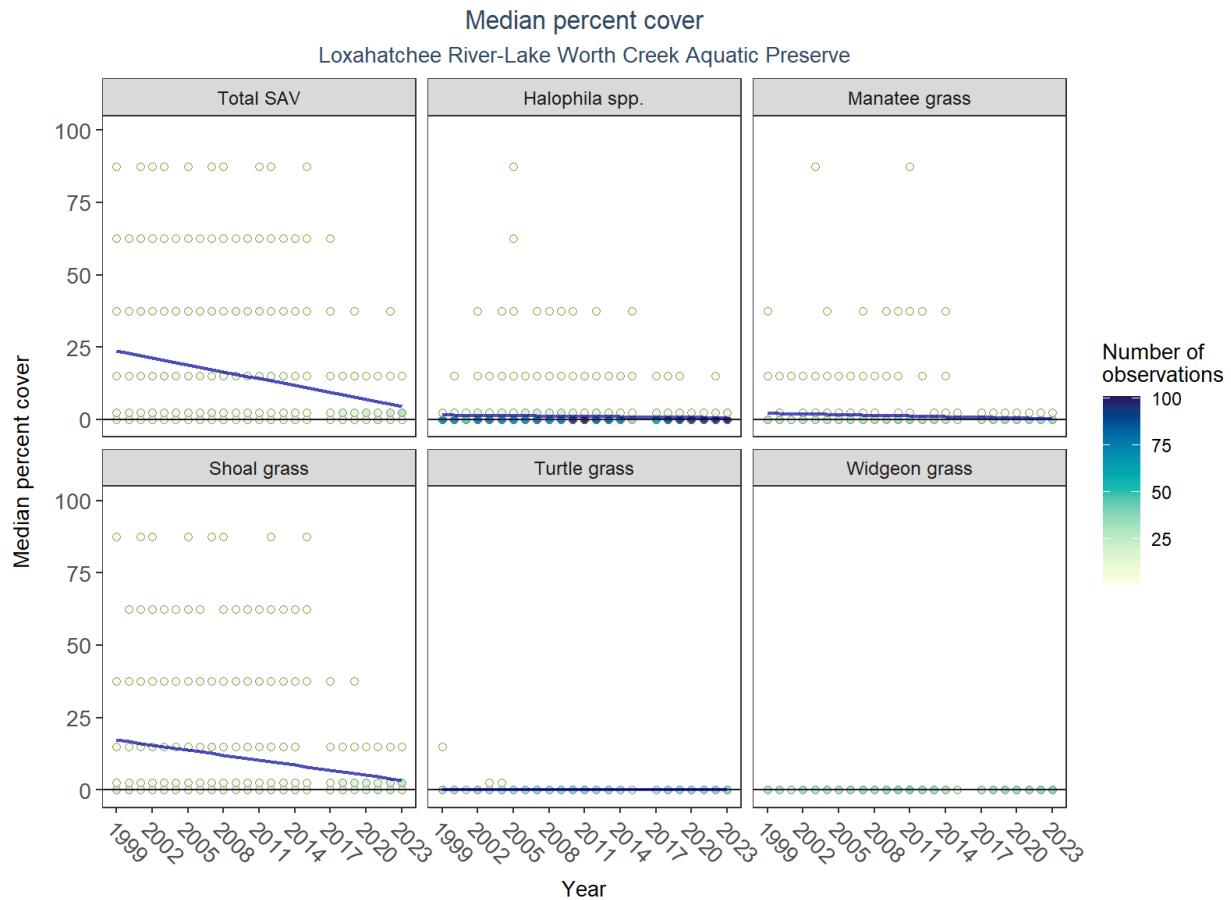
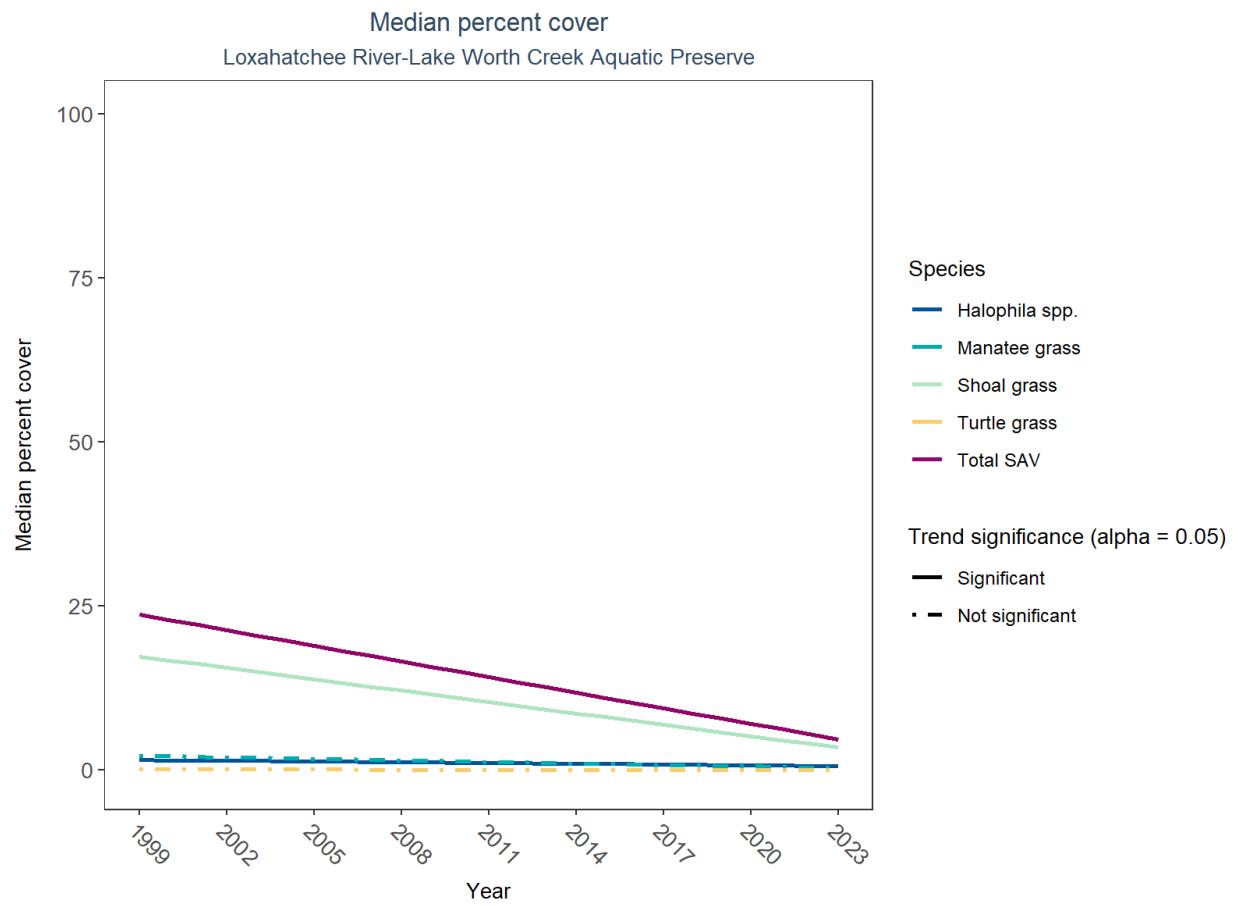
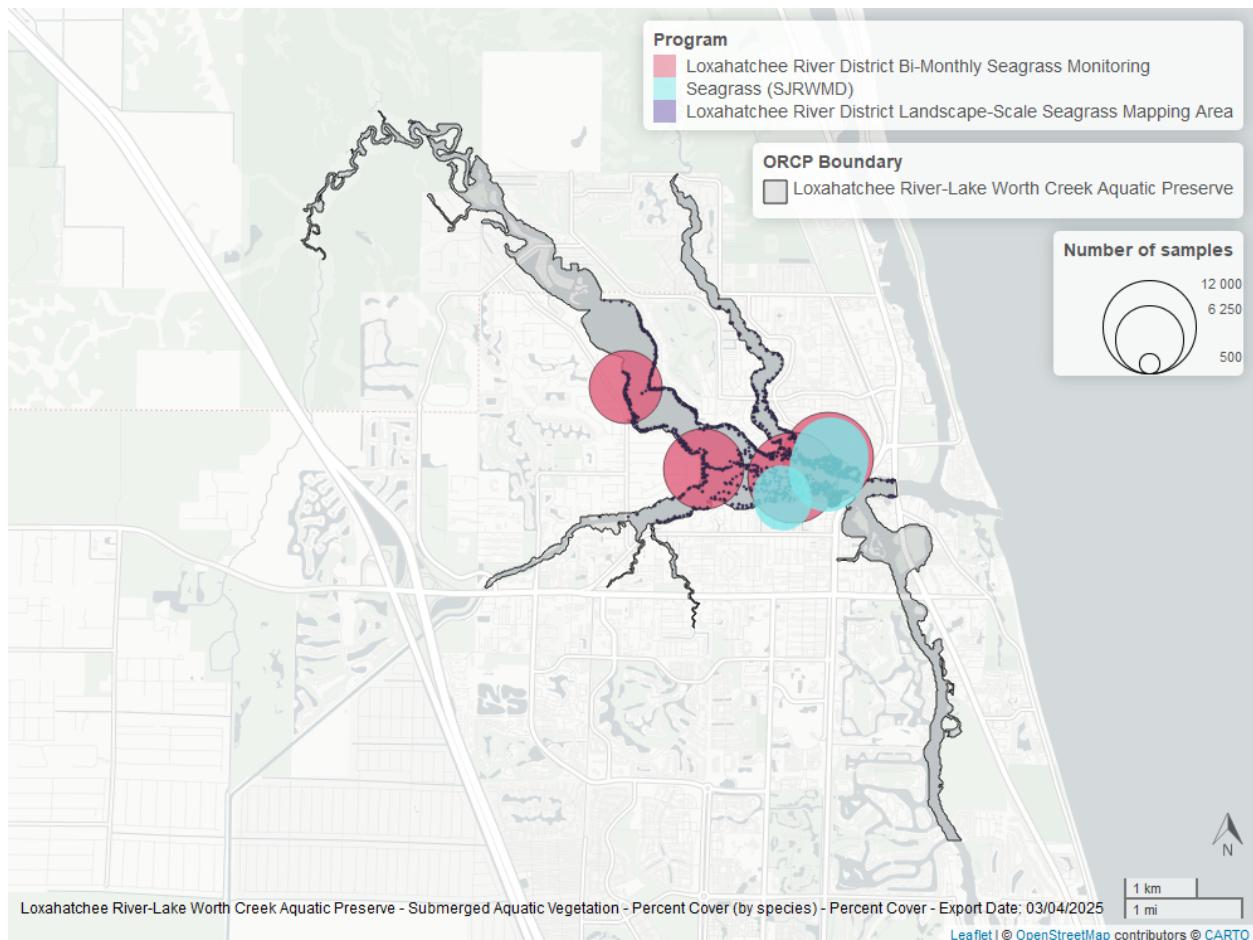


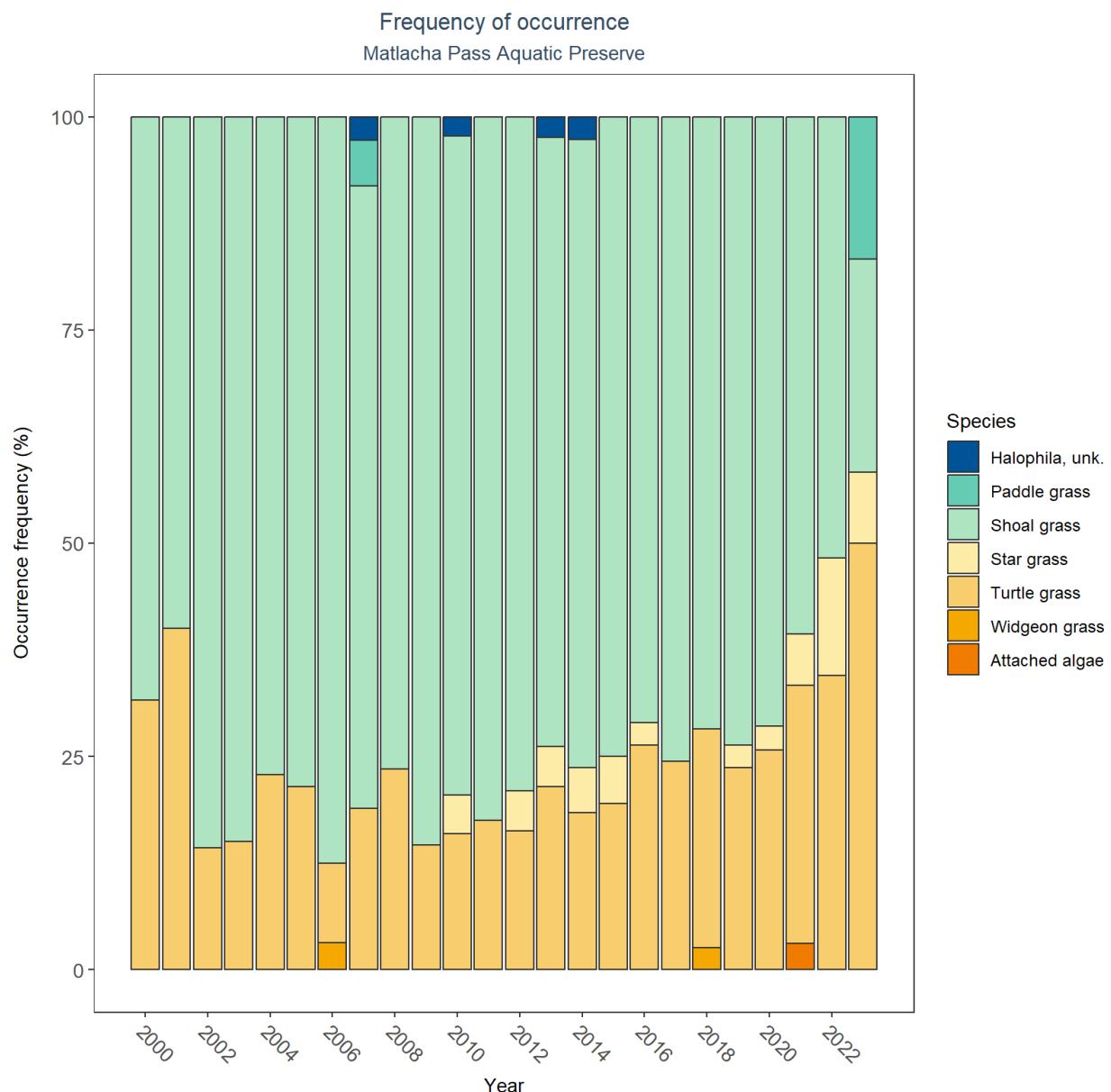
Table 18: SAV LME Results for Loxahatchee River-Lake Worth Creek Aquatic Preserve

Species	Statistical Trend	Period of Record	LME Intercept	LME Slope	p
Drift algae	Insufficient data to calculate trend	-	-	-	-
Shoal grass	Significantly decreasing trend	1999 - 2023	20.16	-0.58	0.00
Halophila spp.	Significantly decreasing trend	1999 - 2023	1.71	-0.04	0.00
Widgeon grass	Model did not fit the available data	-	-	-	-
Manatee grass	No significant trend	1999 - 2023	2.54	-0.08	0.35
Turtle grass	No significant trend	1999 - 2023	0.10	0.00	0.30
Total SAV	Significantly decreasing trend	1999 - 2023	27.60	-0.79	0.00
Total seagrass	Insufficient data to calculate trend	-	-	-	-





Matlacha Pass Aquatic Preserve



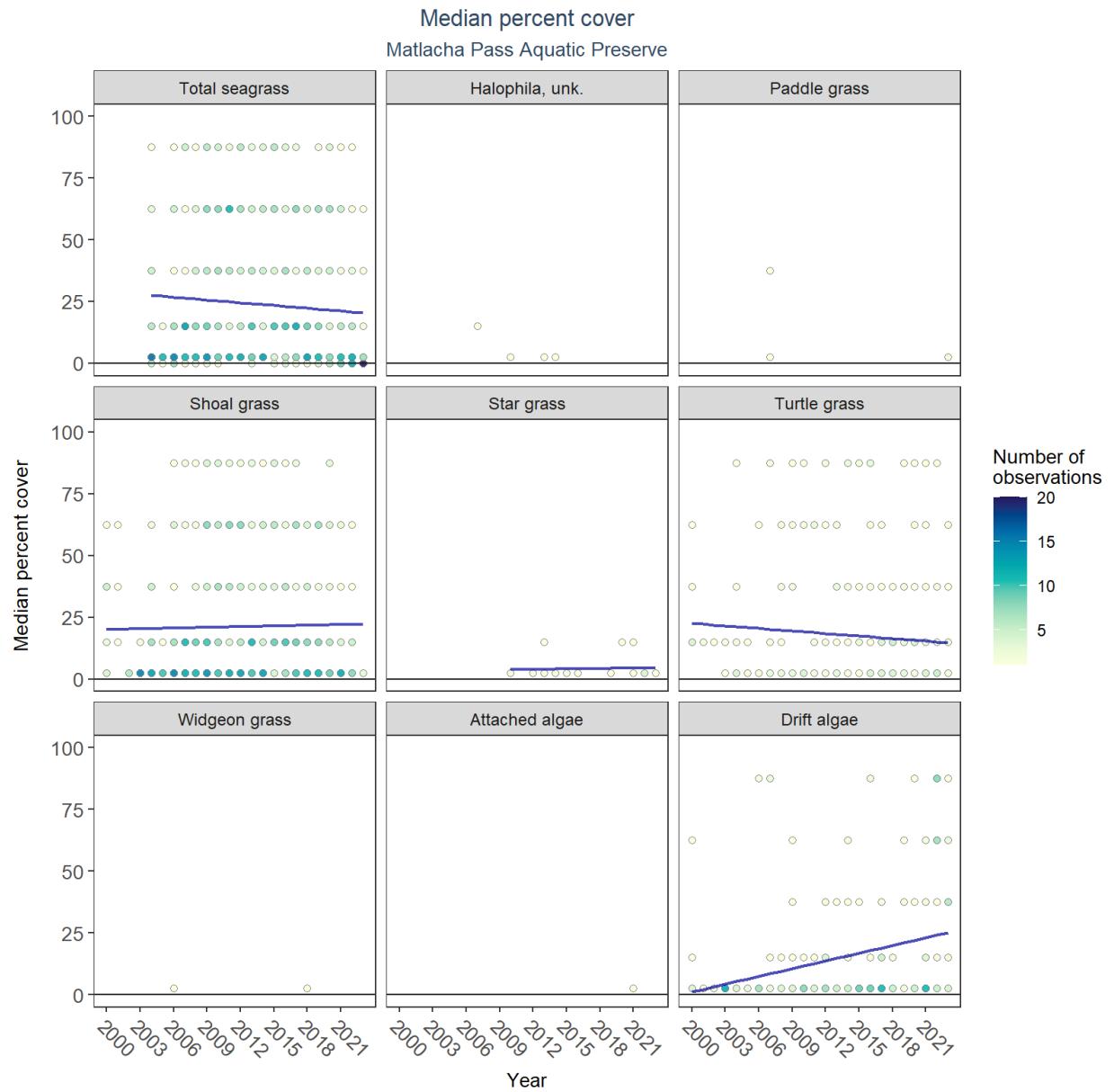
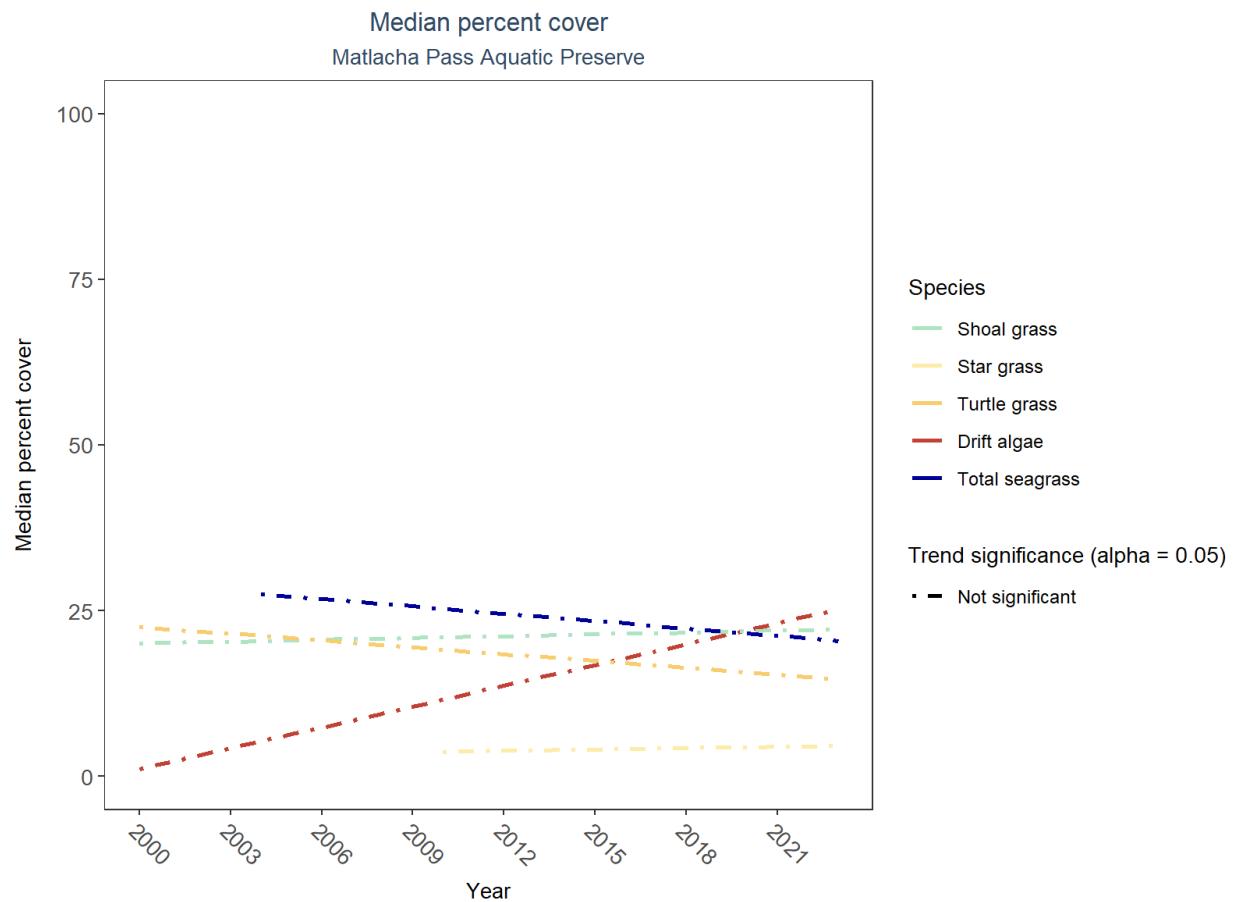
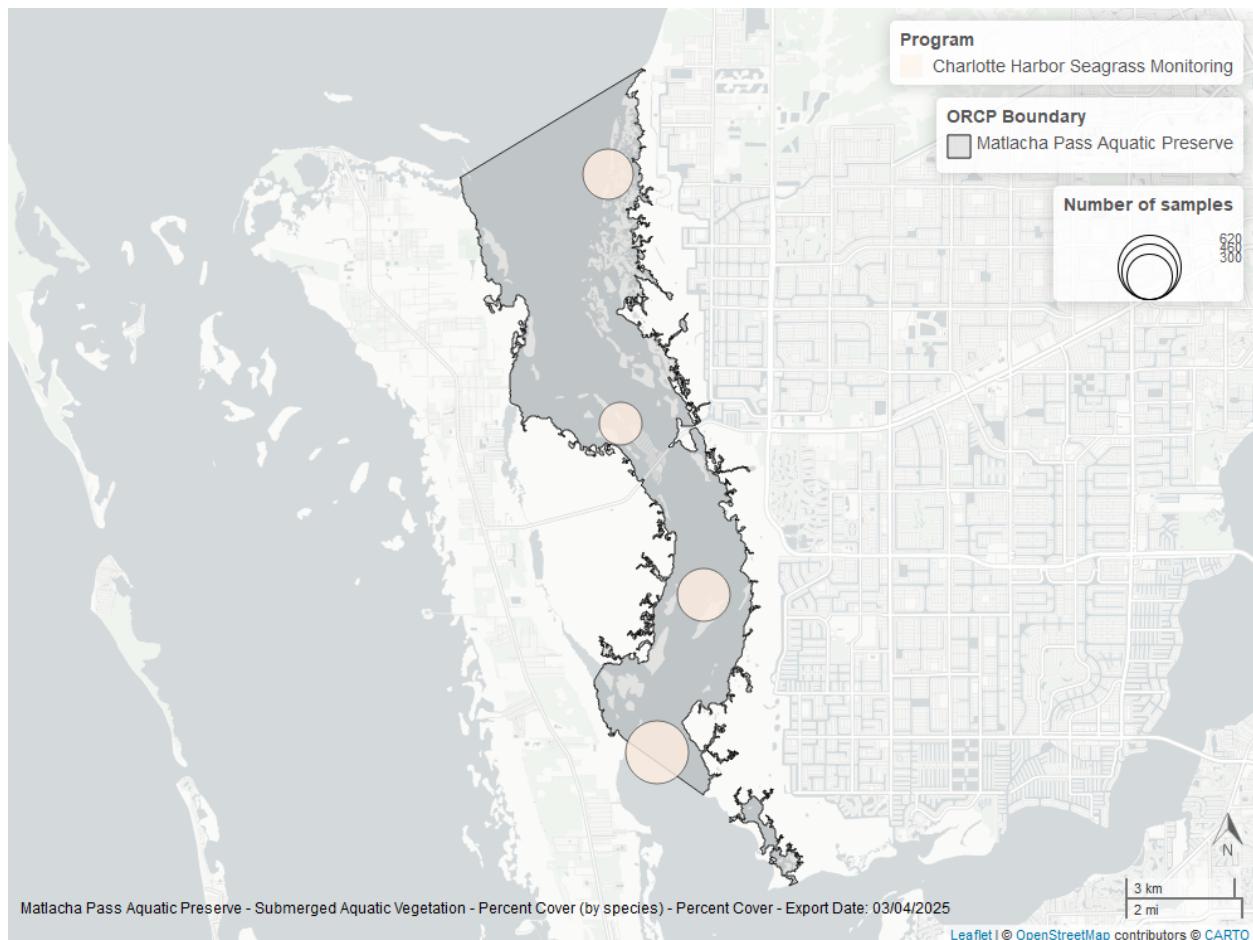


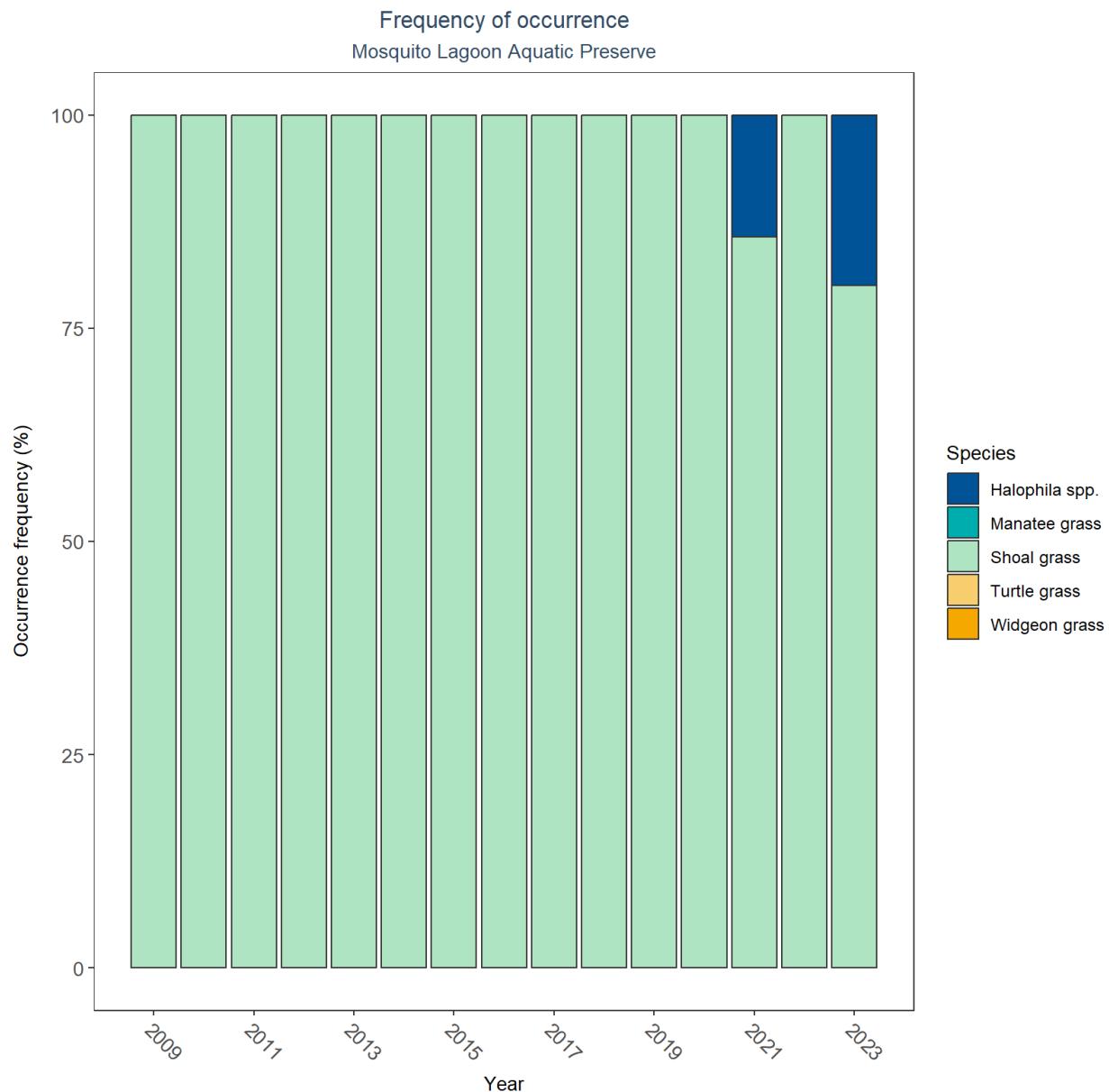
Table 19: SAV LME Results for Matlacha Pass Aquatic Preserve

Species	Statistical Trend	Period of Record	LME Intercept	LME Slope	p
Attached algae	Insufficient data to calculate trend	-	-	-	-
Drift algae	No significant trend	2000 - 2023	-5.16	1.05	0.13
Shoal grass	No significant trend	2000 - 2023	19.52	0.09	0.85
Paddle grass	Insufficient data to calculate trend	-	-	-	-
Star grass	No significant trend	2010 - 2023	2.64	0.07	0.78
No grass in quadrat	Model did not fit the available data	-	-	-	-
Widgeon grass	Insufficient data to calculate trend	-	-	-	-
Turtle grass	No significant trend	2000 - 2023	24.63	-0.34	0.36
Total seagrass	No significant trend	2004 - 2023	31.25	-0.37	0.31
Halophila, unk.	Insufficient data to calculate trend	-	-	-	-





Mosquito Lagoon Aquatic Preserve



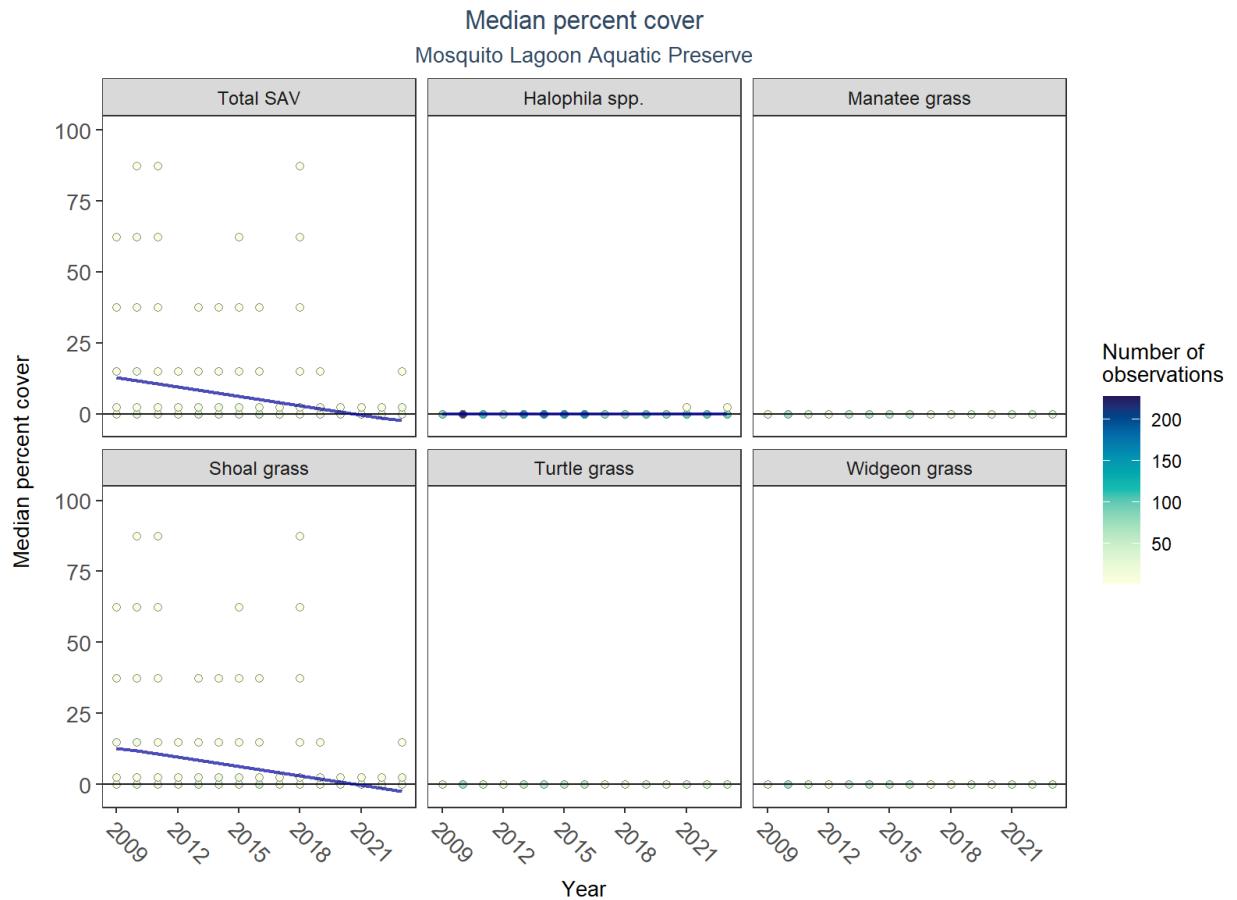
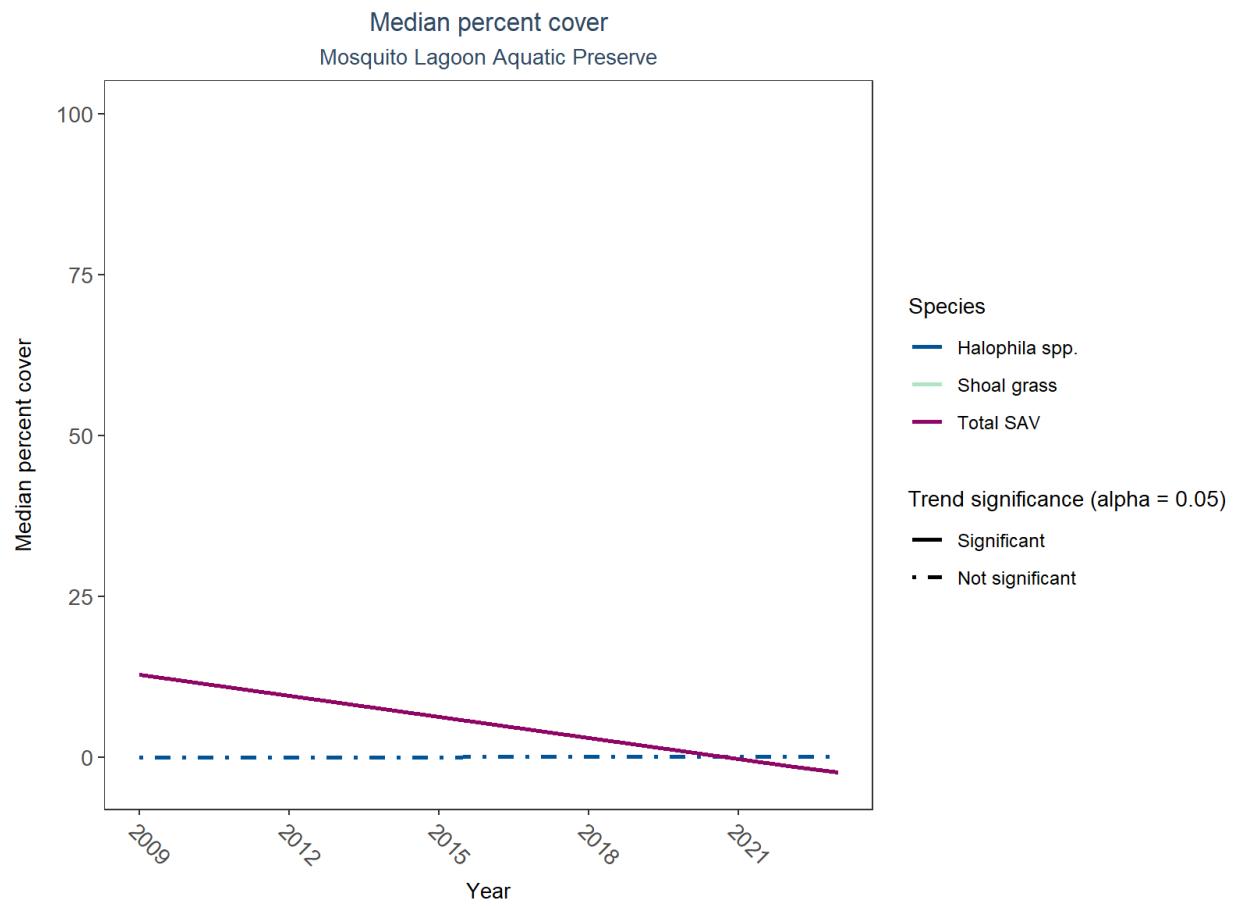
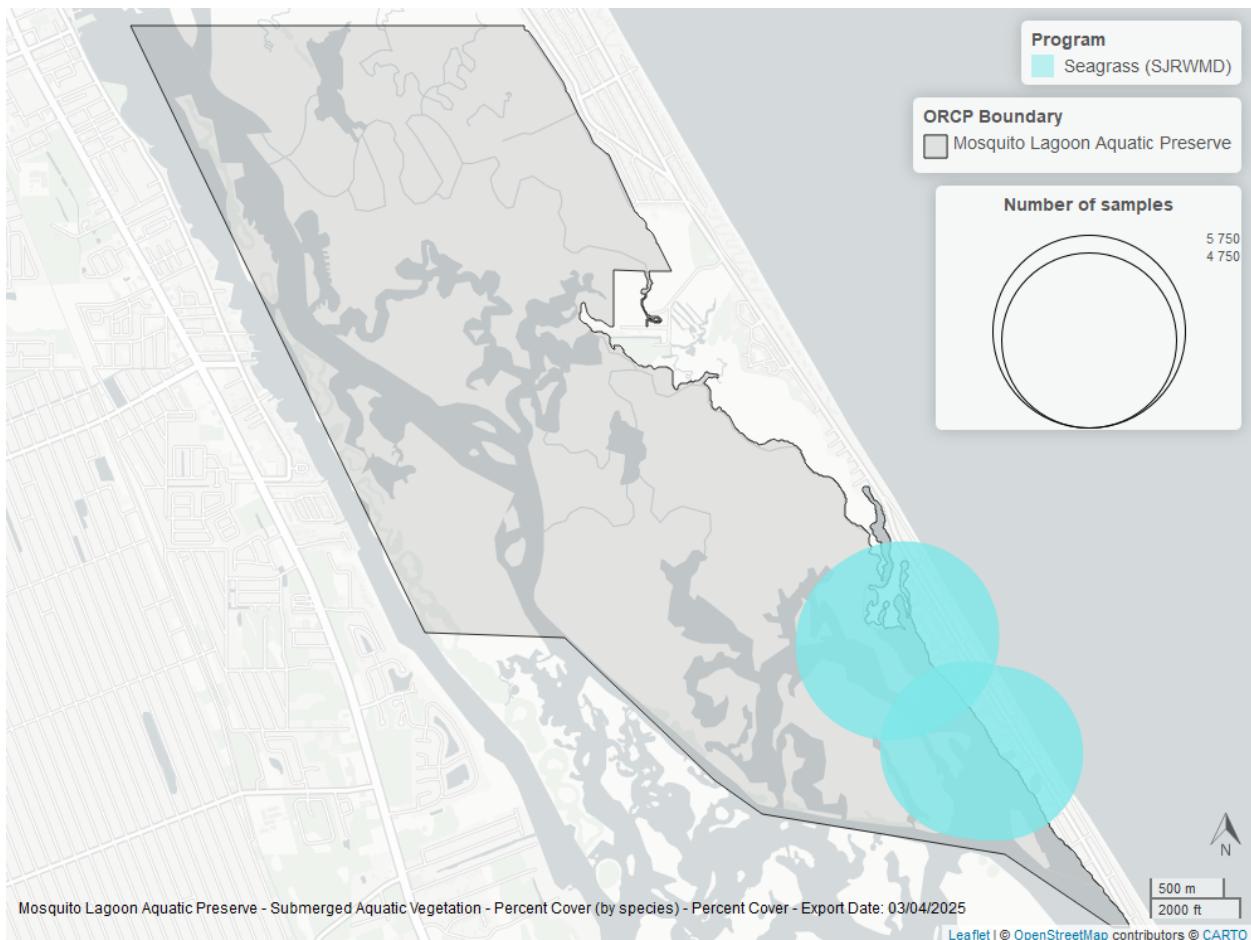


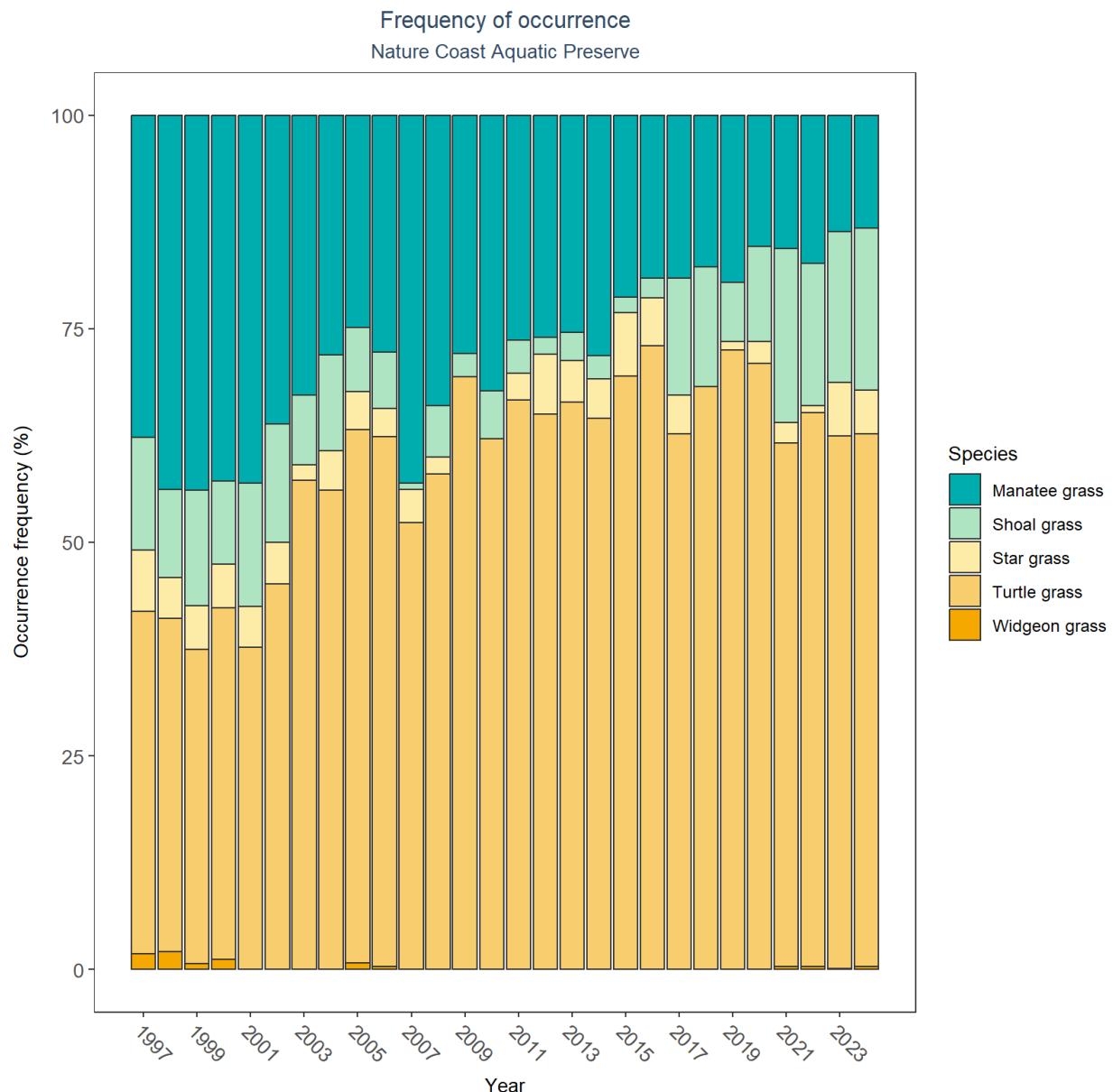
Table 20: SAV LME Results for Mosquito Lagoon Aquatic Preserve

Species	Statistical Trend	Period of Record	LME Intercept	LME Slope	p
Drift algae	Insufficient data to calculate trend	-	-	-	-
Shoal grass	Significantly decreasing trend	2009 - 2023	29.17	-1.09	0.01
Halophila spp.	No significant trend	2009 - 2023	-0.05	0.00	0.32
Widgeon grass	Model did not fit the available data	-	-	-	-
Manatee grass	Model did not fit the available data	-	-	-	-
Turtle grass	Model did not fit the available data	-	-	-	-
Total SAV	Significantly decreasing trend	2009 - 2023	29.11	-1.09	0.01
Total seagrass	Insufficient data to calculate trend	-	-	-	-





Nature Coast Aquatic Preserve



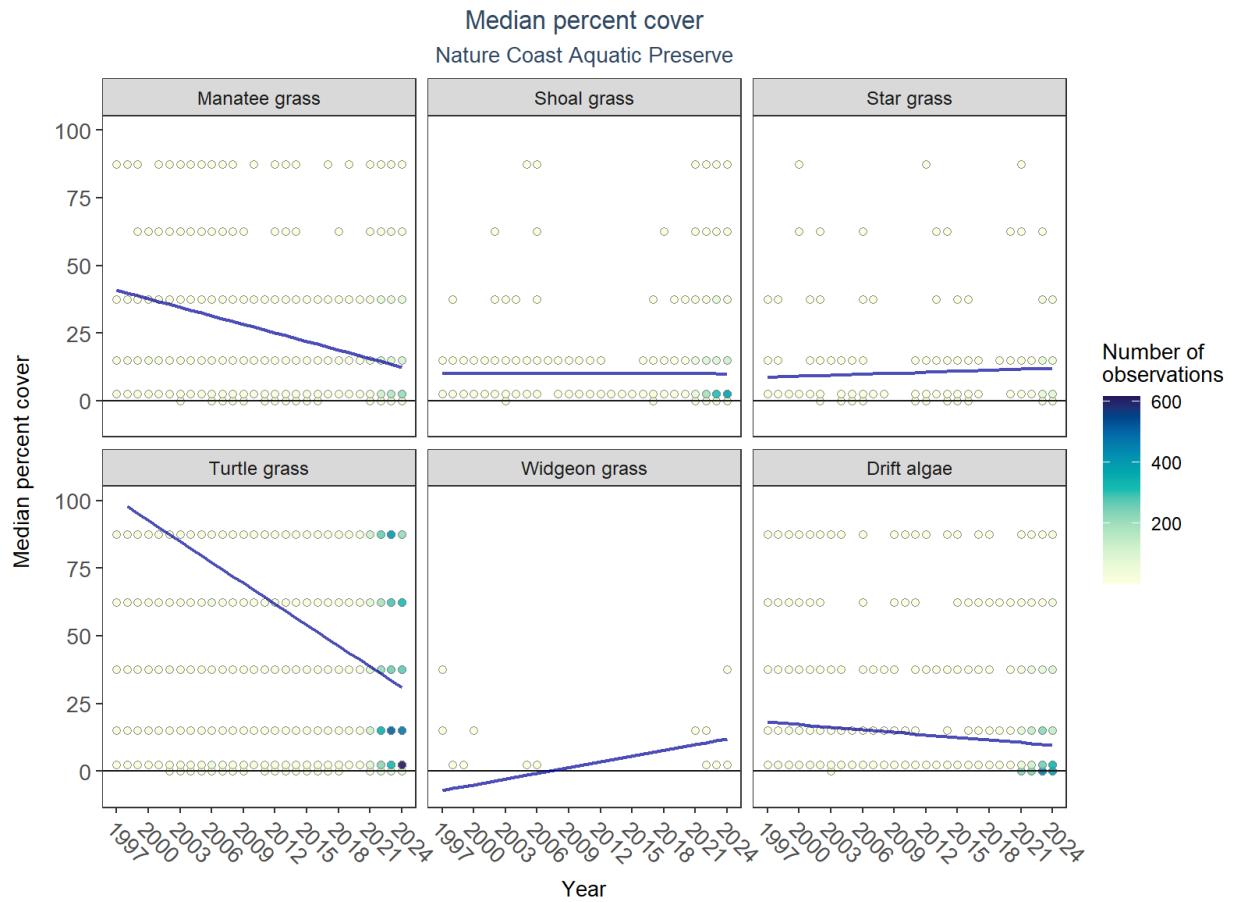
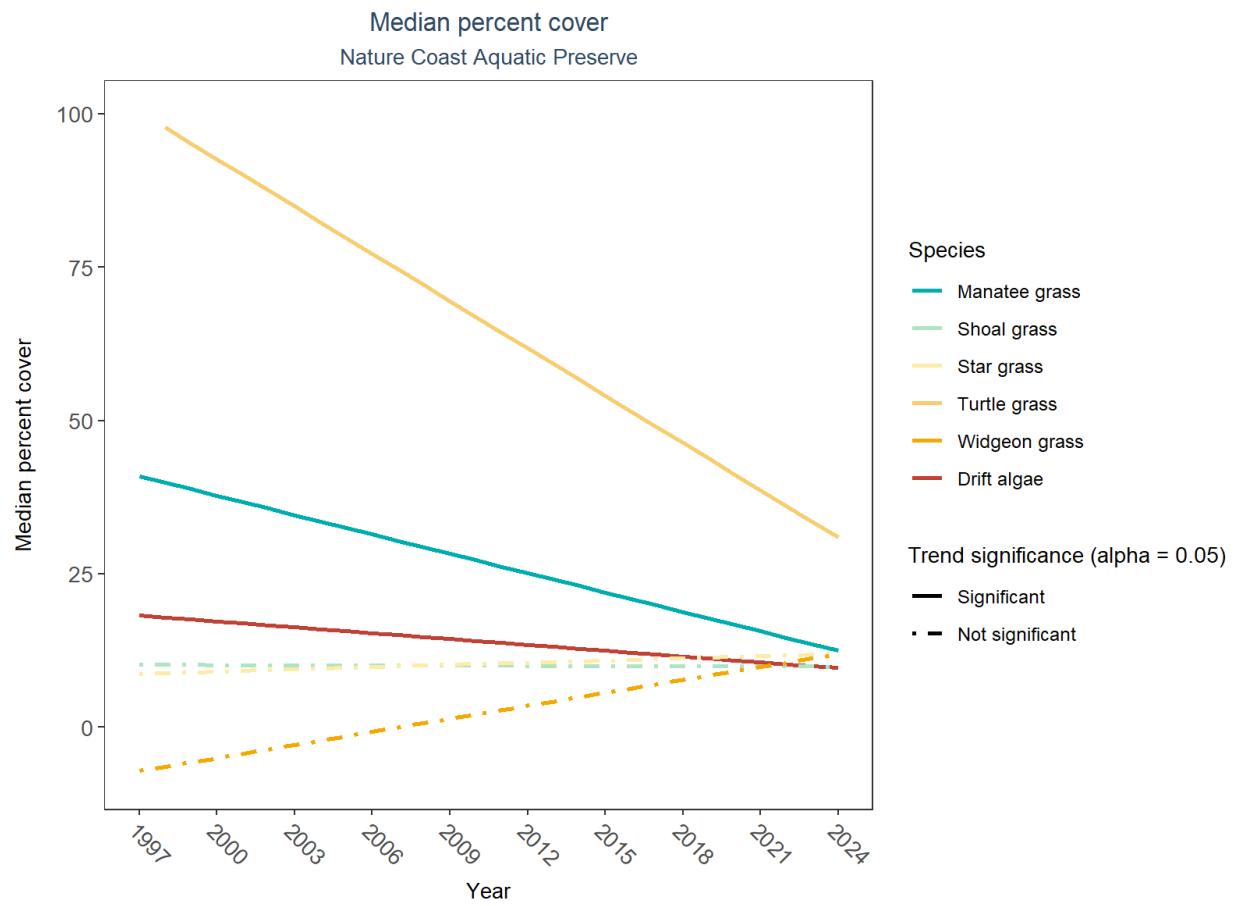
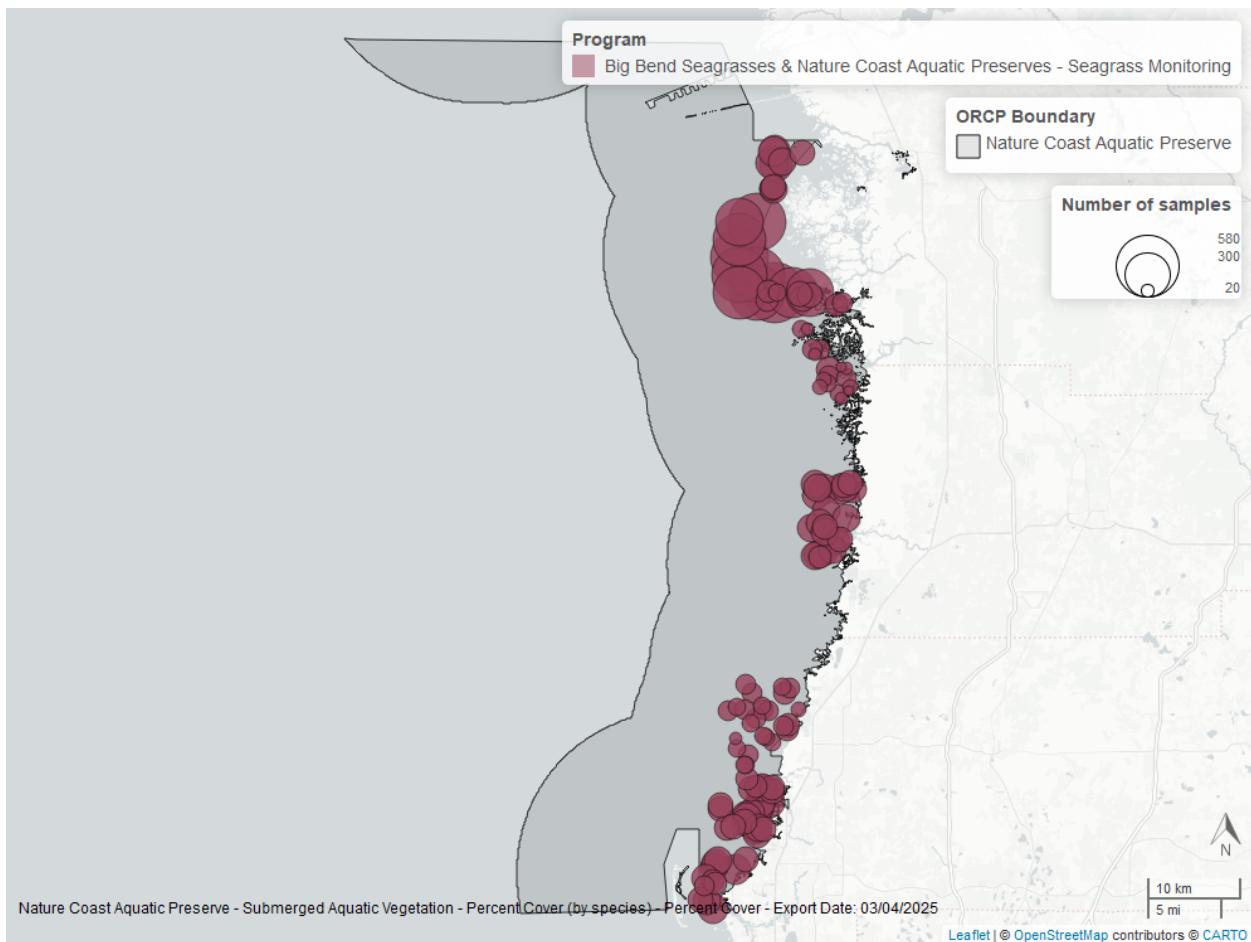


Table 21: SAV LME Results for Nature Coast Aquatic Preserve

Species	Statistical Trend	Period of Record	LME Intercept	LME Slope	p
Drift algae	Significantly decreasing trend	1997 - 2024	19.15	-0.32	0.02
Shoal grass	No significant trend	1997 - 2024	10.22	-0.01	0.87
Star grass	No significant trend	1997 - 2024	8.35	0.12	0.29
No grass in quadrat	Model did not fit the available data	-	-	-	-
Widgeon grass	No significant trend	1997 - 2024	-9.23	0.70	0.75
Manatee grass	Significantly decreasing trend	1997 - 2024	44.07	-1.05	0.01
Turtle grass	Significantly decreasing trend	1997 - 2024	108.01	-2.57	0.00





Pine Island Sound Aquatic Preserve



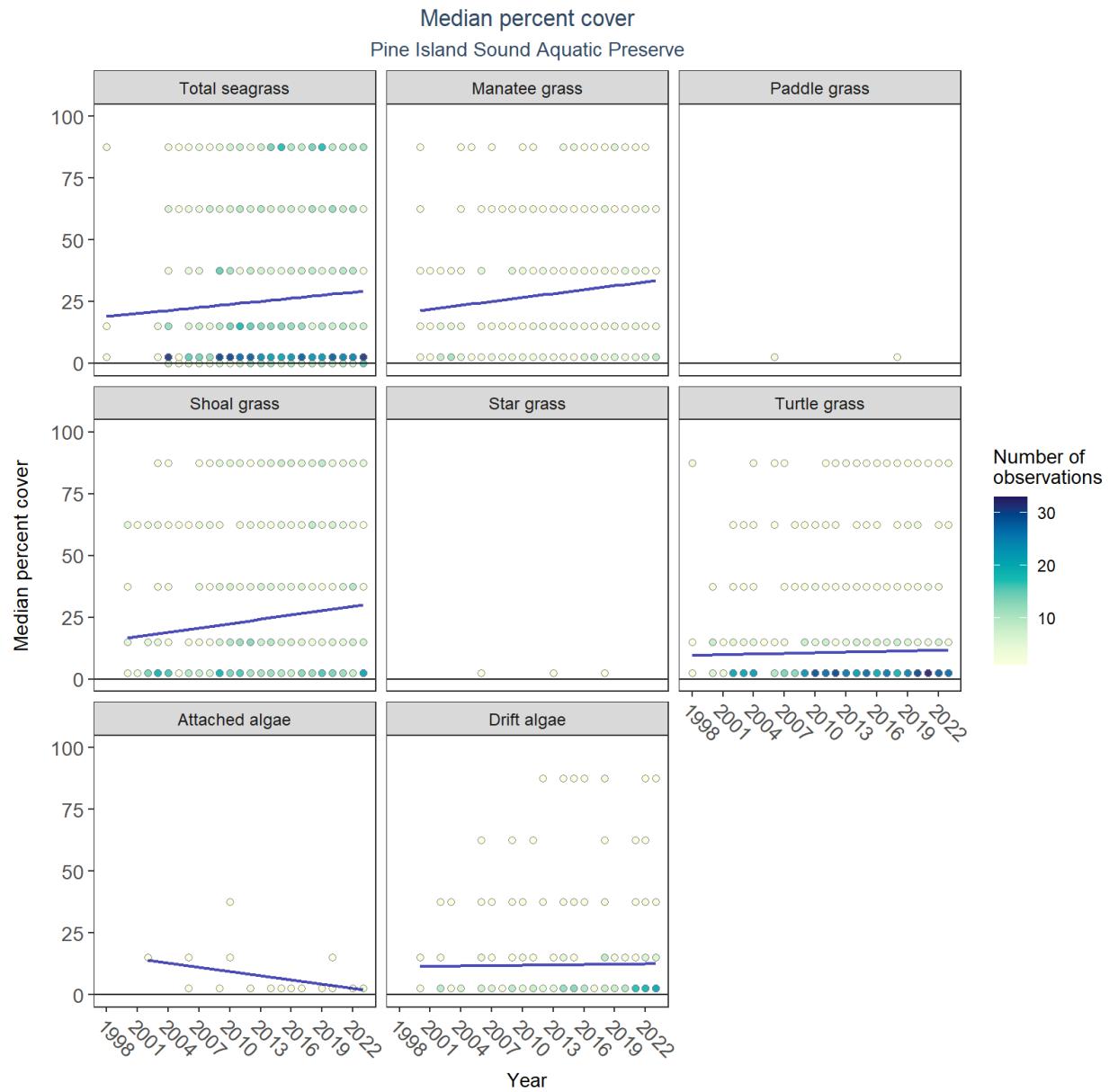
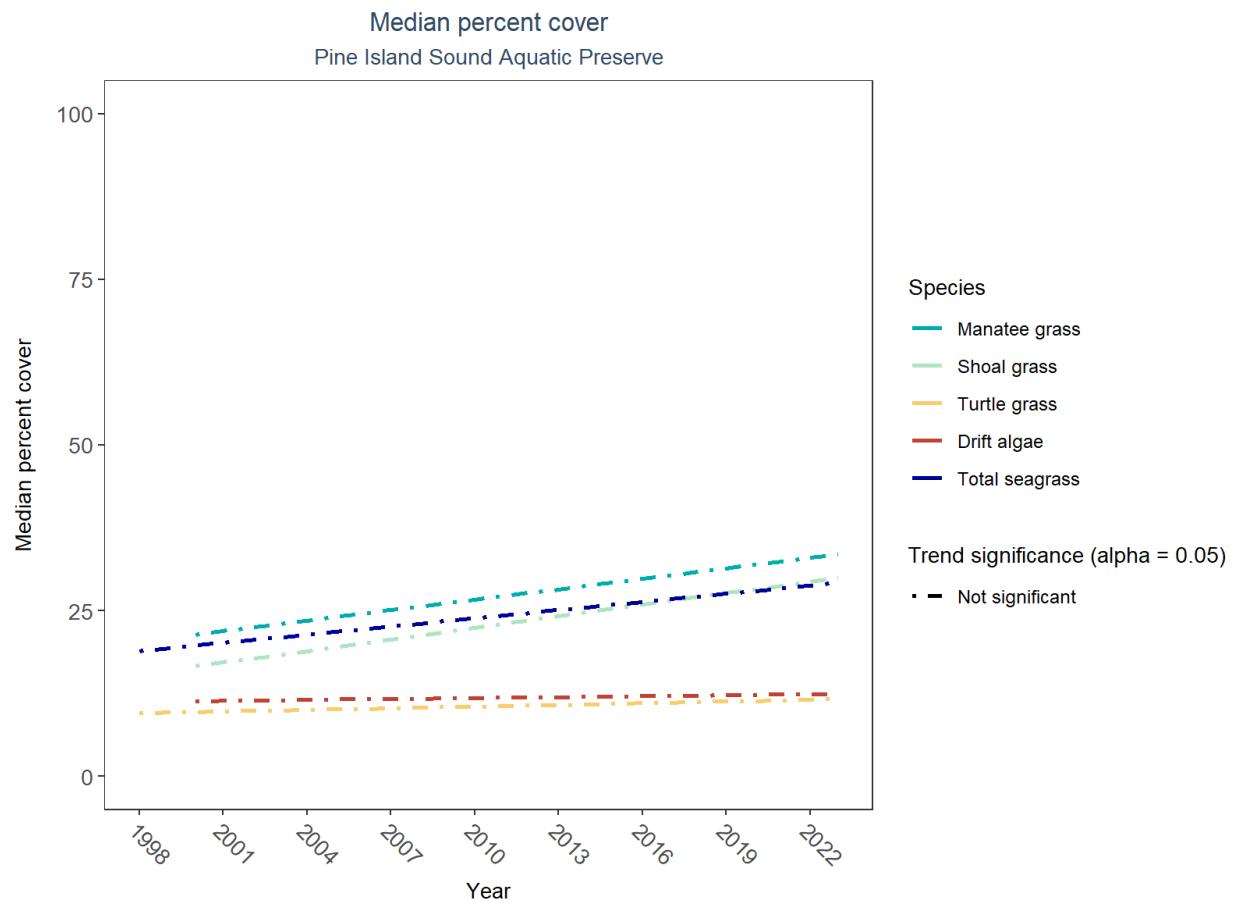
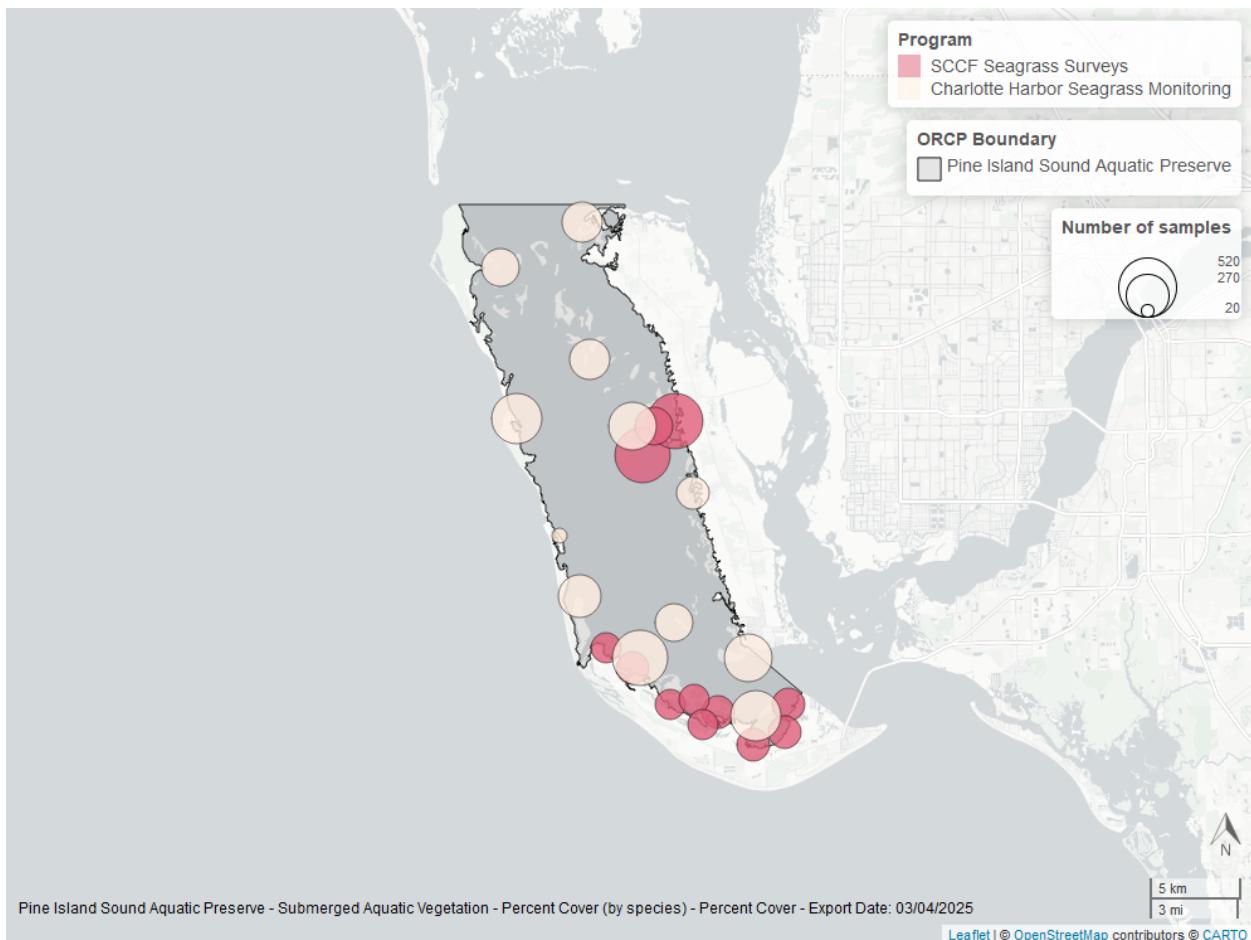


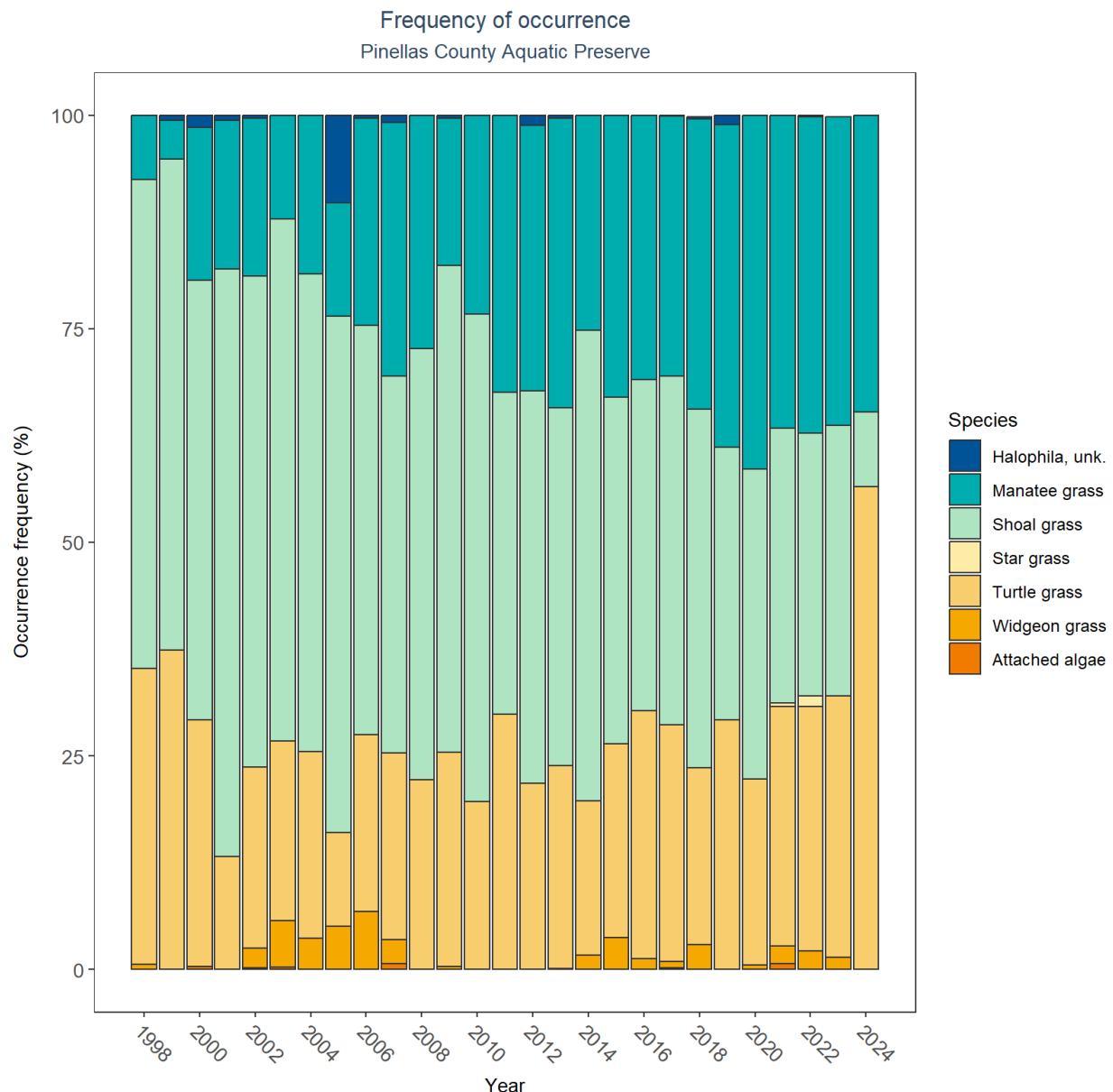
Table 22: SAV LME Results for Pine Island Sound Aquatic Preserve

Species	Statistical Trend	Period of Record	LME Intercept	LME Slope	p
Attached algae	No significant trend	2002 - 2023	18.49	-0.57	0.07
Drift algae	No significant trend	2000 - 2023	11.10	0.05	0.80
Shoal grass	No significant trend	2000 - 2023	13.10	0.58	0.15
Paddle grass	Insufficient data to calculate trend	-	-	-	-
Star grass	Insufficient data to calculate trend	-	-	-	-
No grass in quadrat	Model did not fit the available data	-	-	-	-
Widgeon grass	Insufficient data to calculate trend	-	-	-	-
Manatee grass	No significant trend	2000 - 2023	18.25	0.53	0.13
Turtle grass	No significant trend	1998 - 2023	9.21	0.08	0.54
Total seagrass	No significant trend	1998 - 2023	17.27	0.41	0.20





Pinellas County Aquatic Preserve



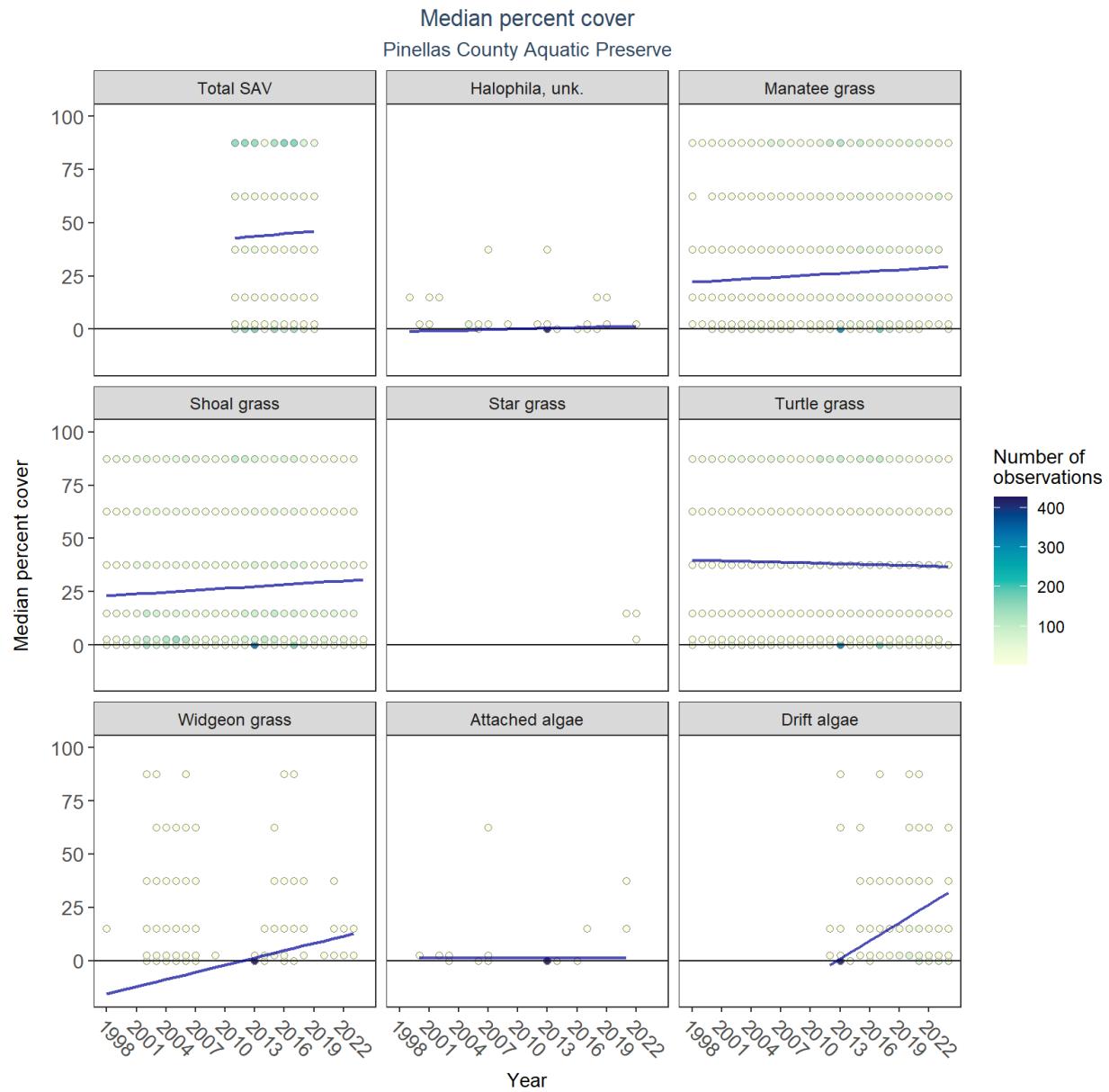
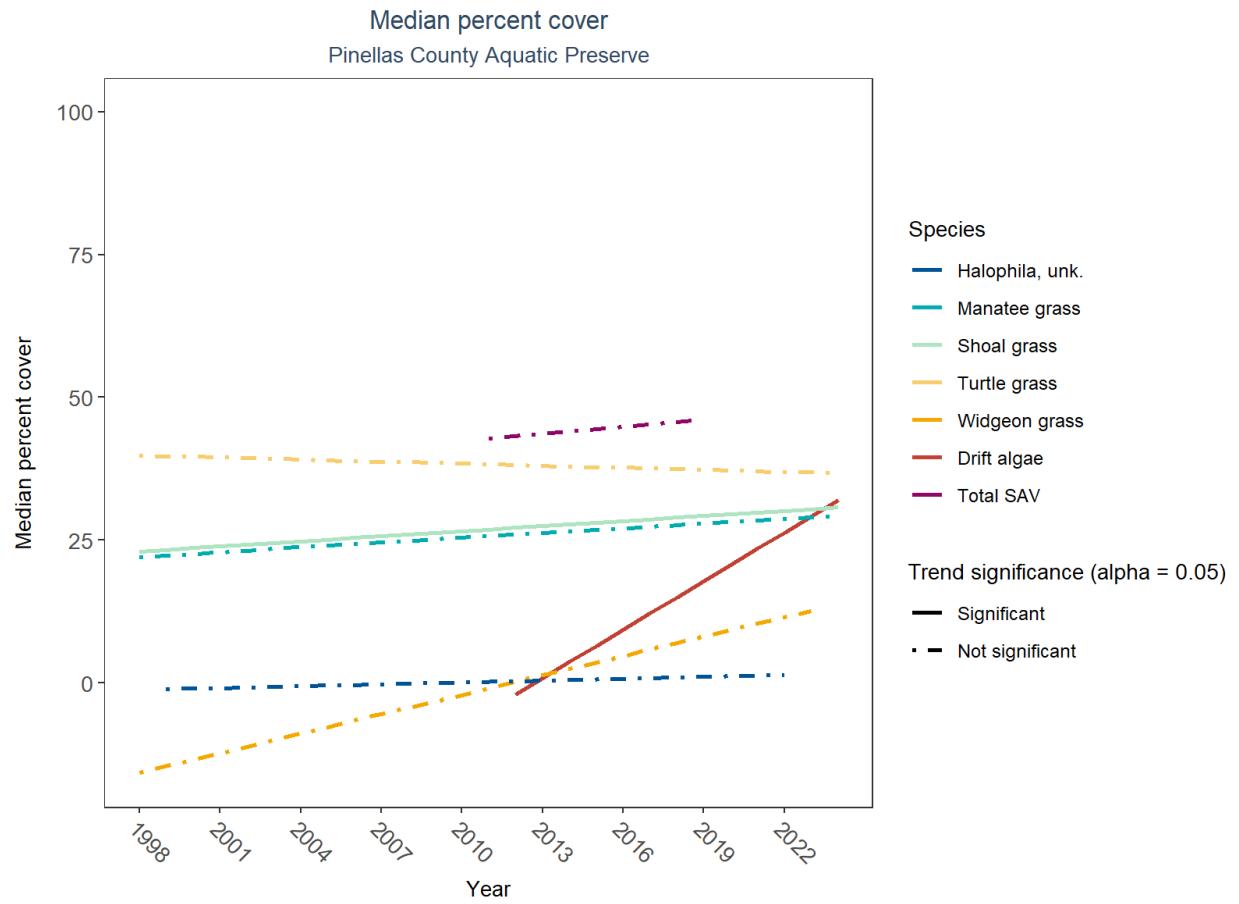
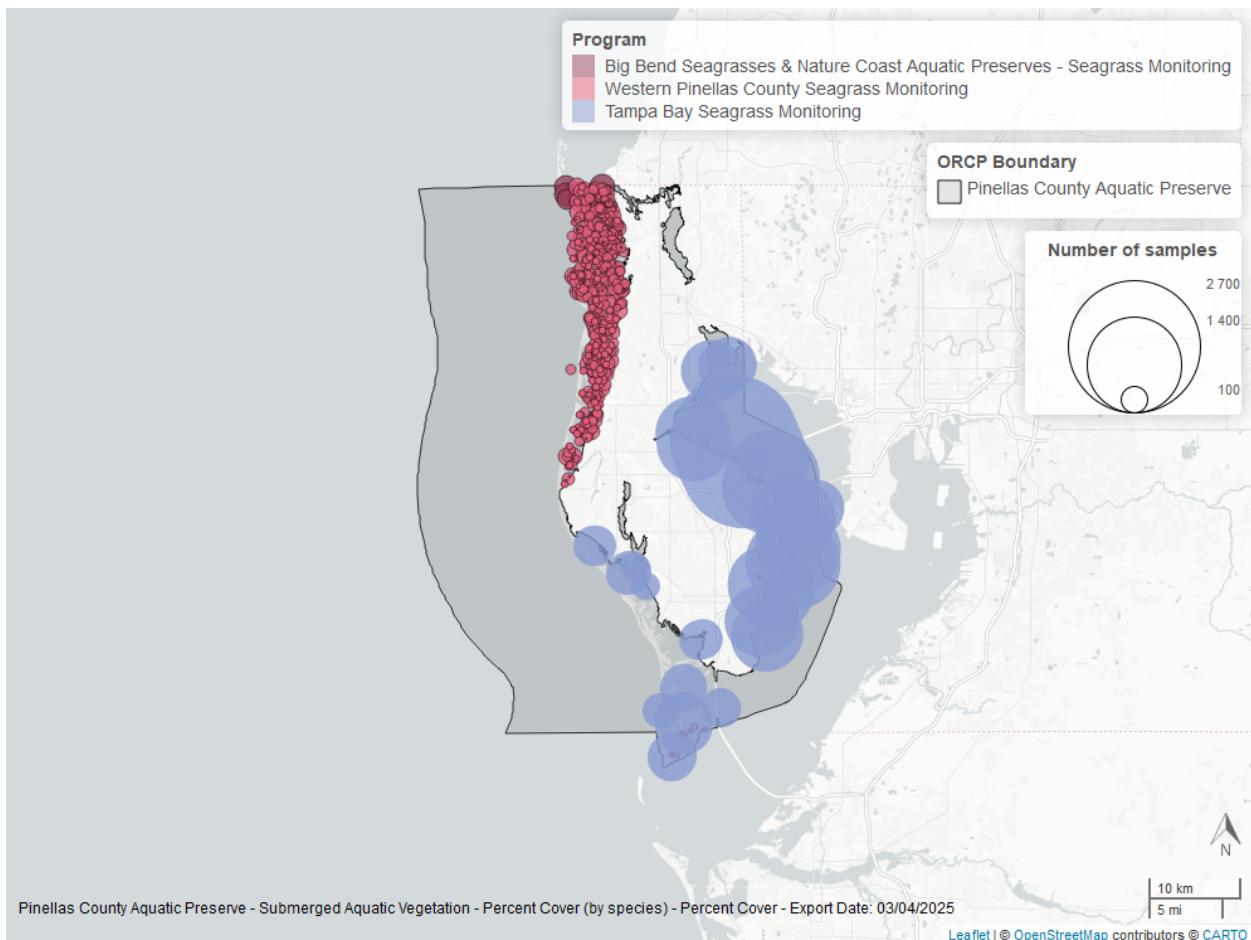


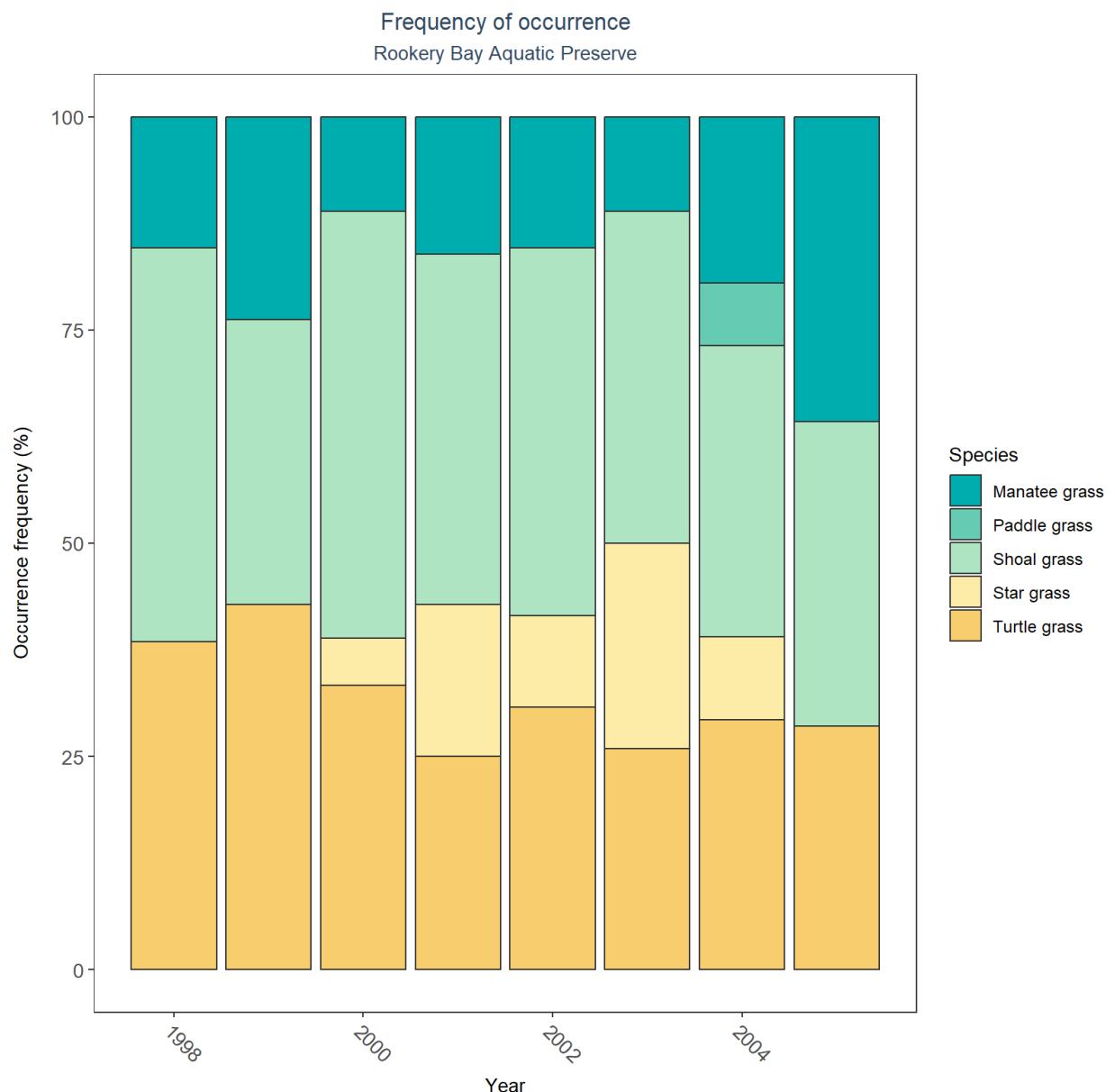
Table 23: SAV LME Results for Pinellas County Aquatic Preserve

Species	Statistical Trend	Period of Record	LME Intercept	LME Slope	p
Attached algae	No significant trend	2000 - 2021	1.35	-0.01	0.96
Drift algae	Significantly increasing trend	2012 - 2024	-52.91	2.83	0.00
Shoal grass	Significantly increasing trend	1998 - 2024	21.83	0.30	0.03
Star grass	Insufficient data to calculate trend	-	-	-	-
No grass in quadrat	Model did not fit the available data	-	-	-	-
Widgeon grass	No significant trend	1998 - 2023	-20.19	1.13	0.38
Manatee grass	No significant trend	1998 - 2024	20.96	0.28	0.22
Turtle grass	No significant trend	1998 - 2024	40.31	-0.12	0.49
Total SAV	No significant trend	2011 - 2019	35.61	0.42	0.57
Halophila, unk.	No significant trend	1999 - 2022	-1.64	0.11	0.66





Rookery Bay Aquatic Preserve



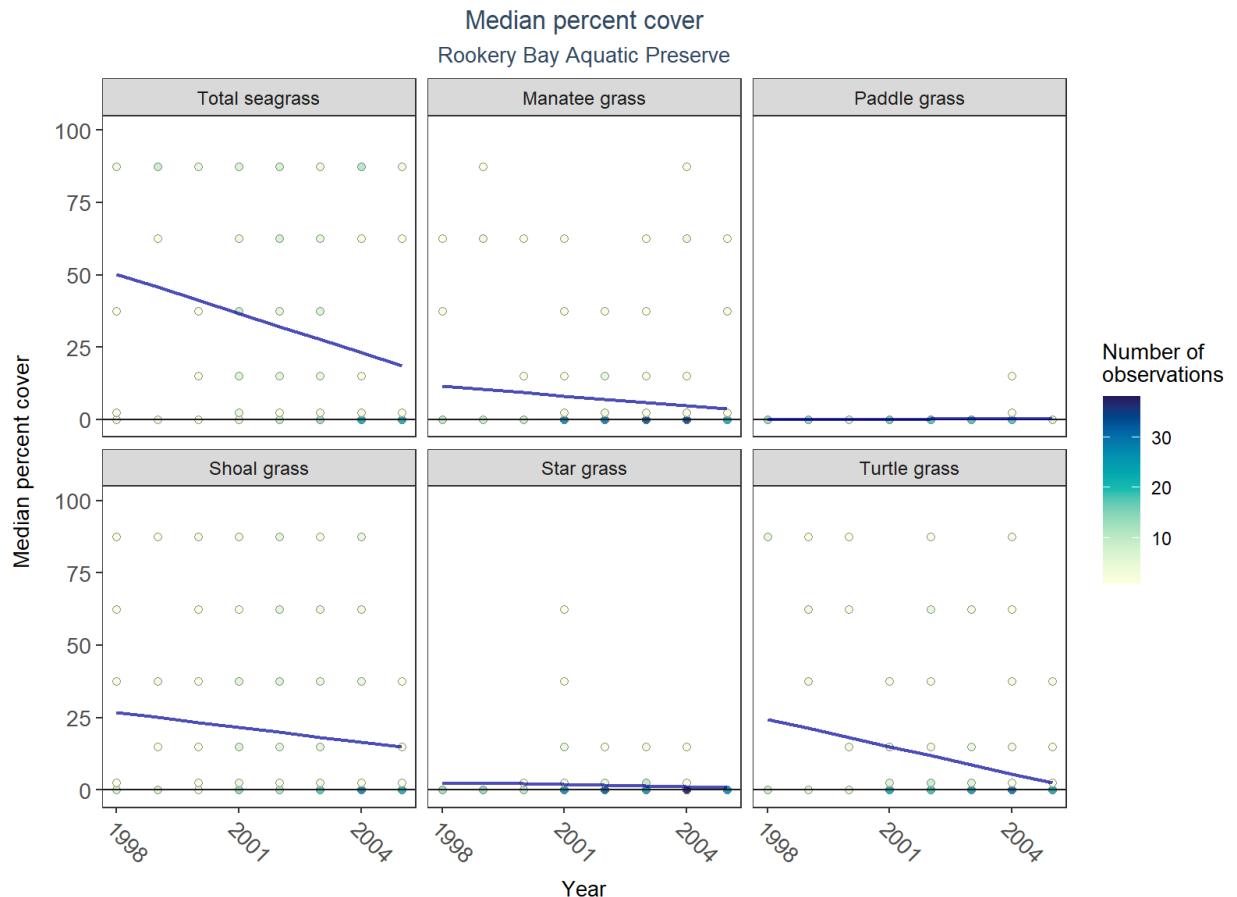
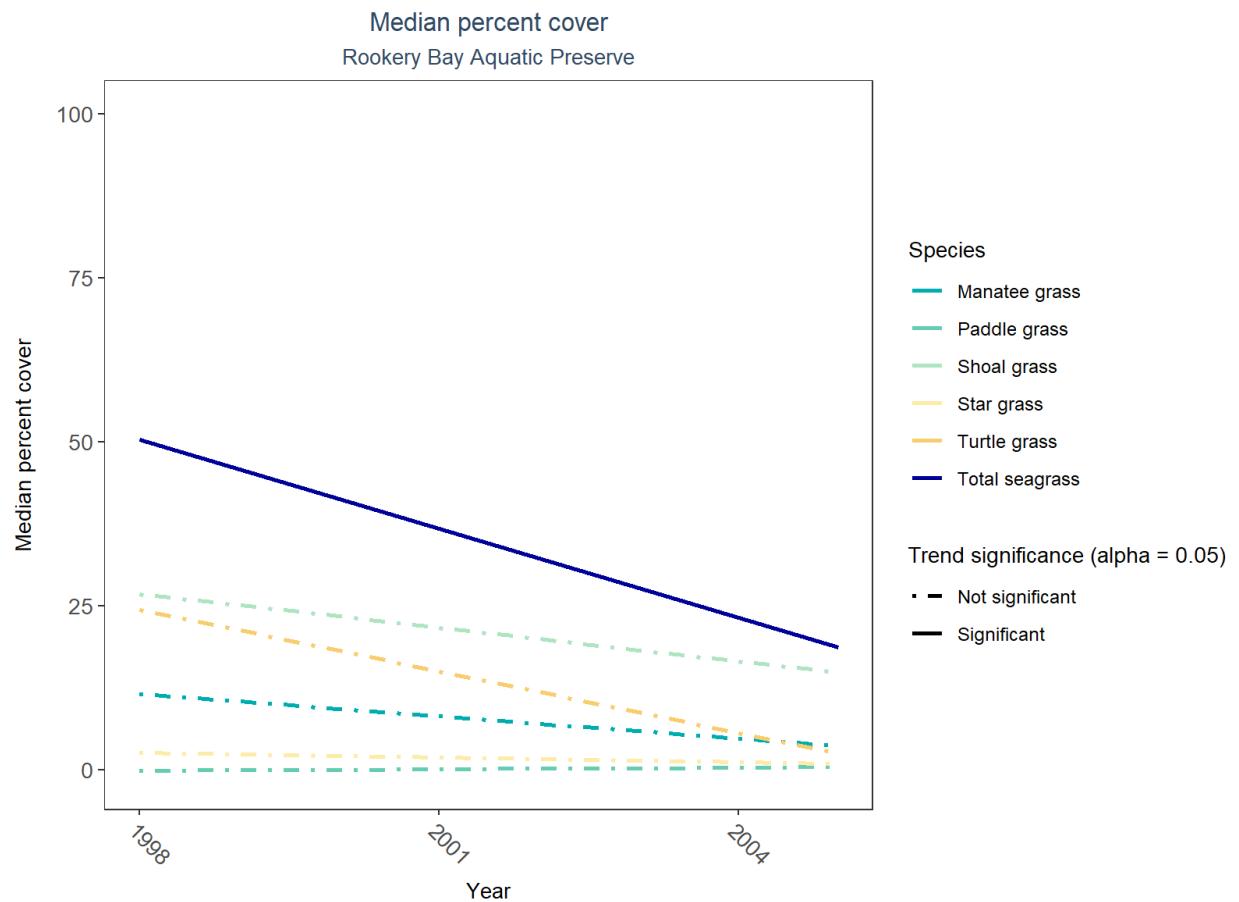
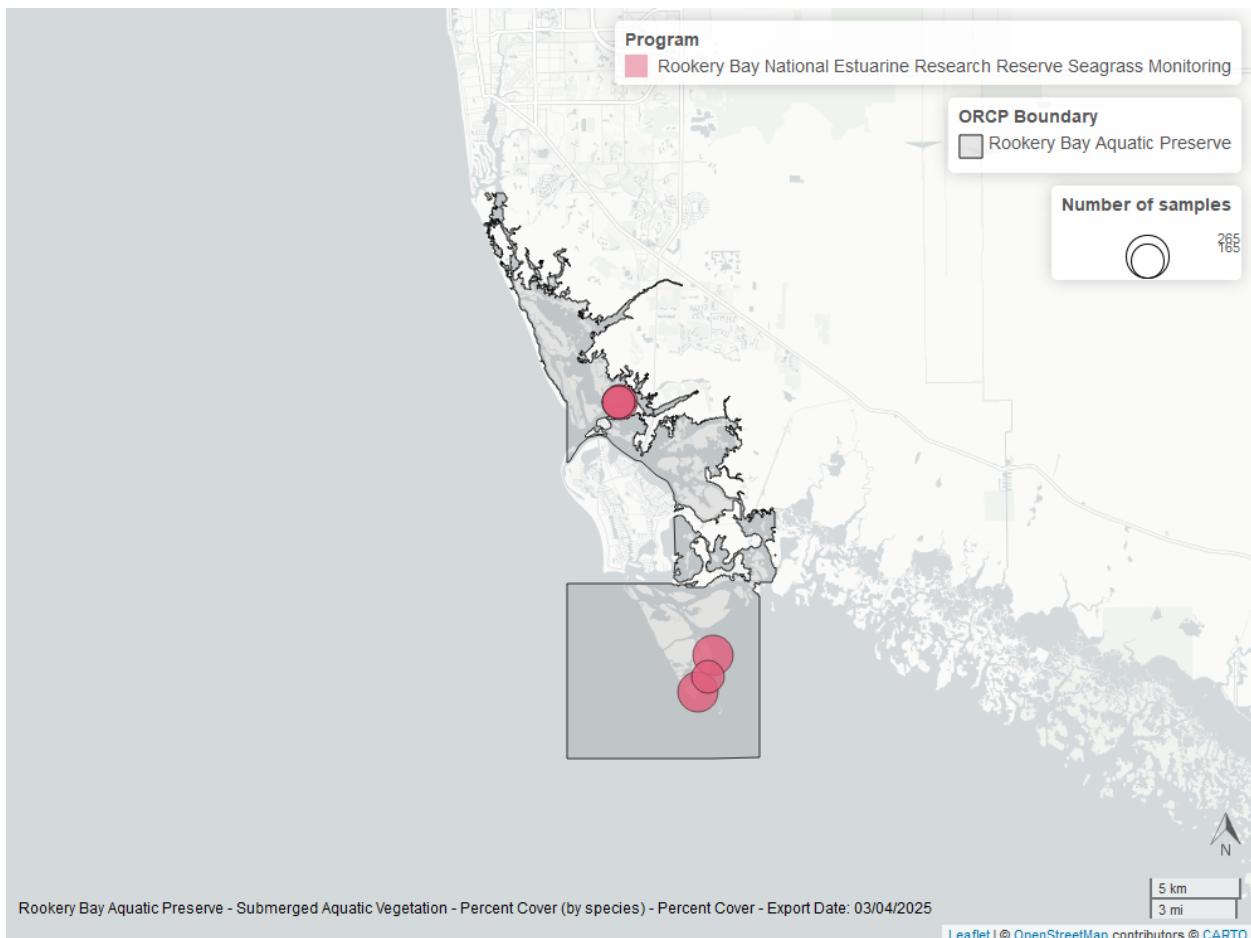


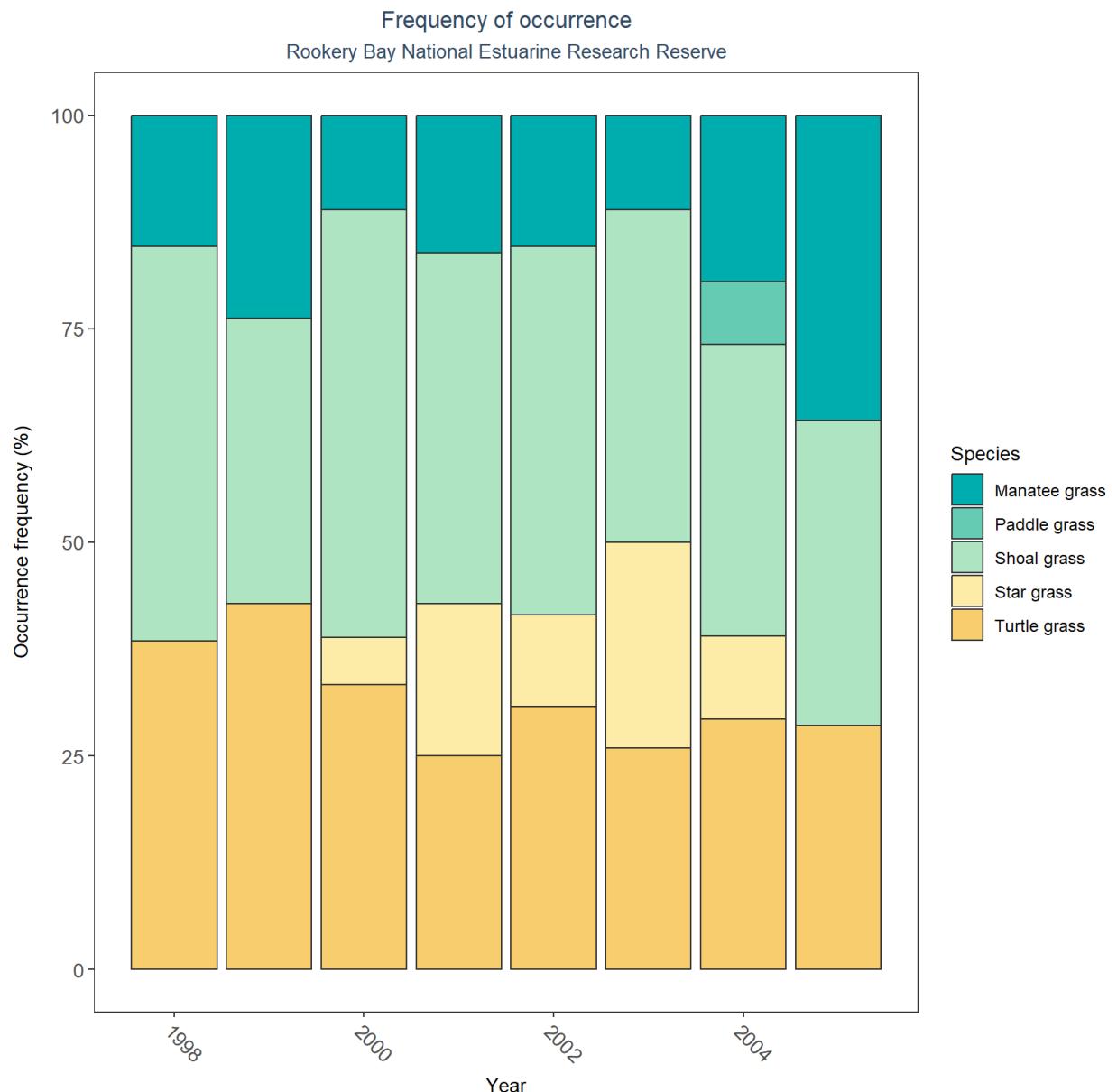
Table 24: SAV LME Results for Rookery Bay Aquatic Preserve

Species	Statistical Trend	Period of Record	LME Intercept	LME Slope	p
Shoal grass	No significant trend	1998 - 2005	33.63	-1.71	0.25
Paddle grass	No significant trend	1998 - 2005	-0.44	0.08	0.36
Star grass	No significant trend	1998 - 2005	3.53	-0.23	0.44
Manatee grass	No significant trend	1998 - 2005	16.10	-1.13	0.40
Turtle grass	No significant trend	1998 - 2005	36.99	-3.14	0.07
Total seagrass	Significantly decreasing trend	1998 - 2005	68.37	-4.52	0.02





Rookery Bay National Estuarine Research Reserve



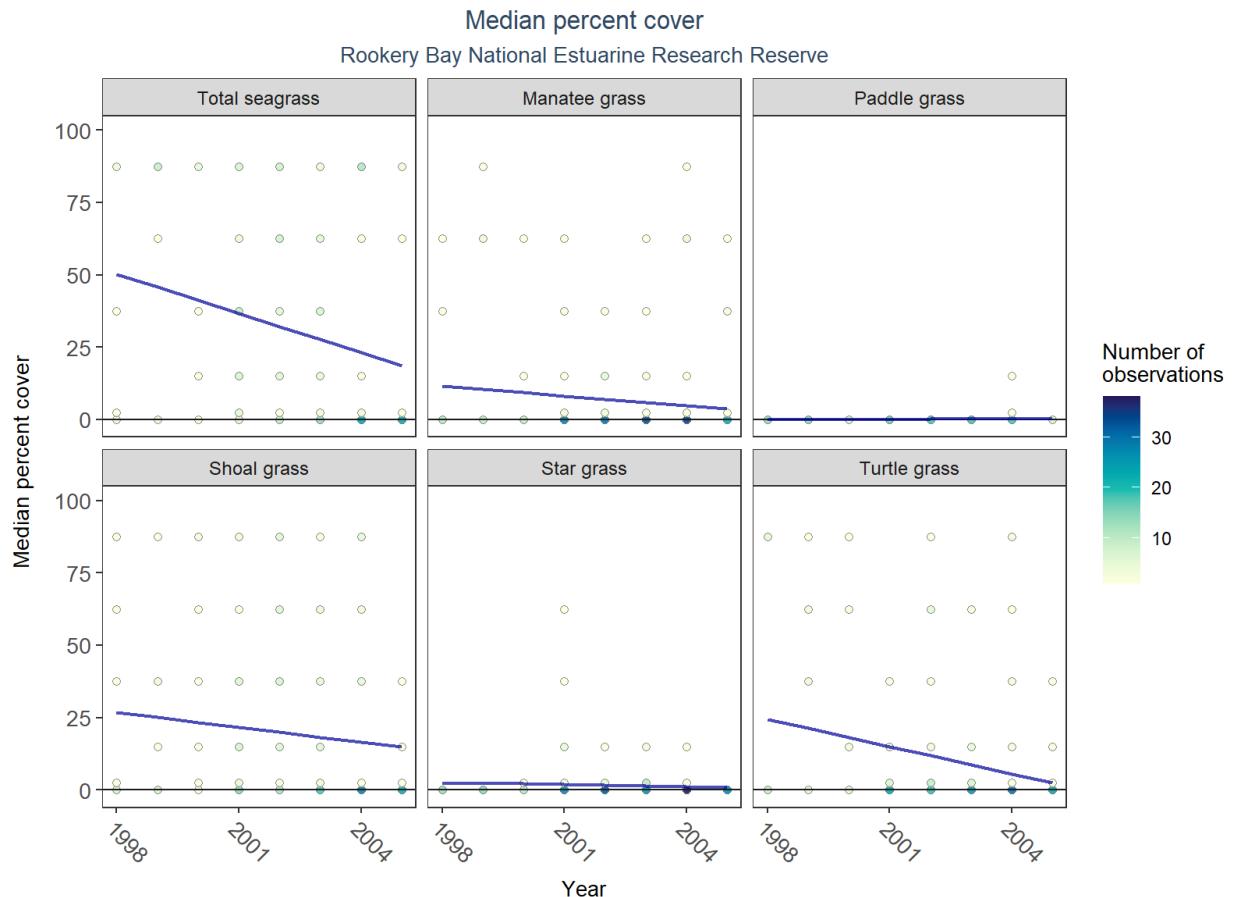
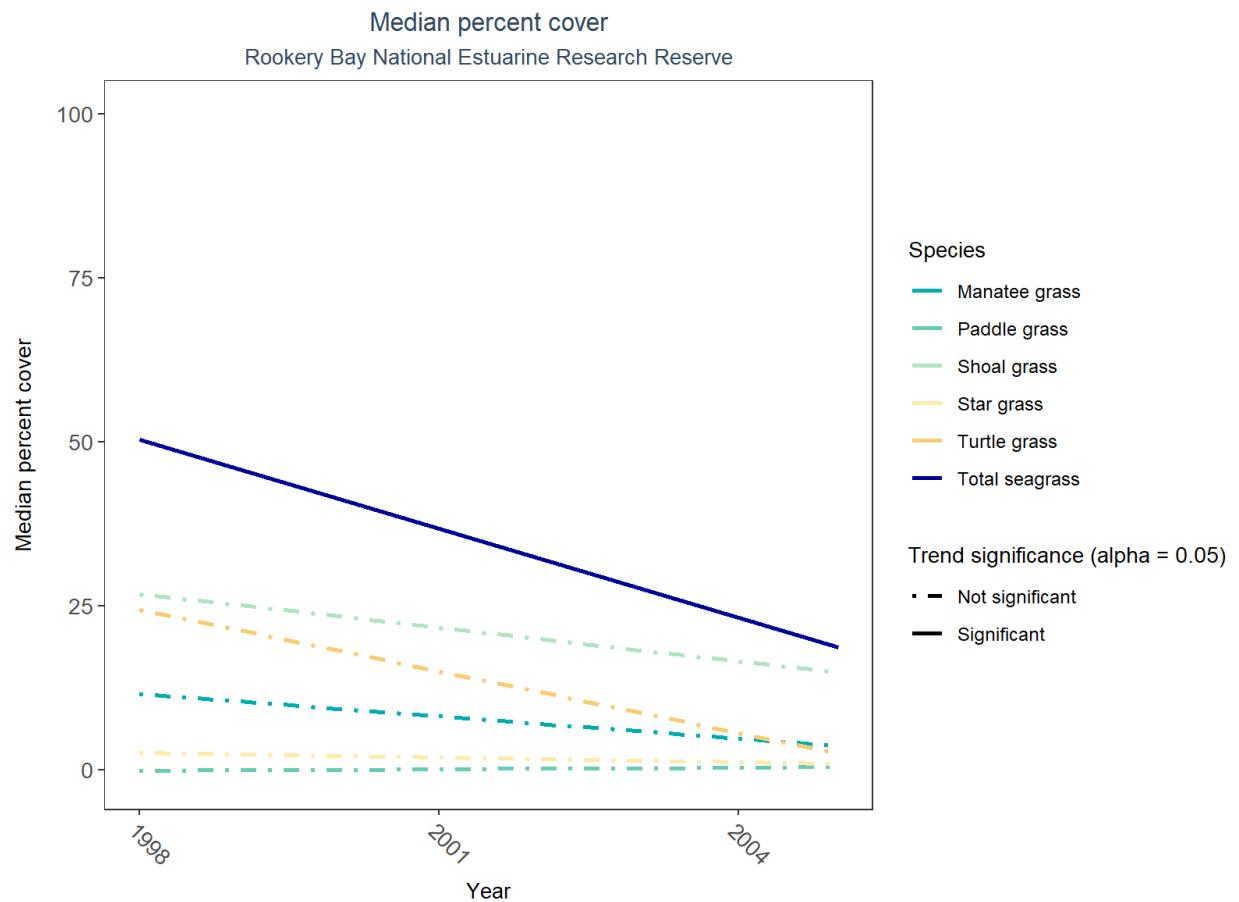
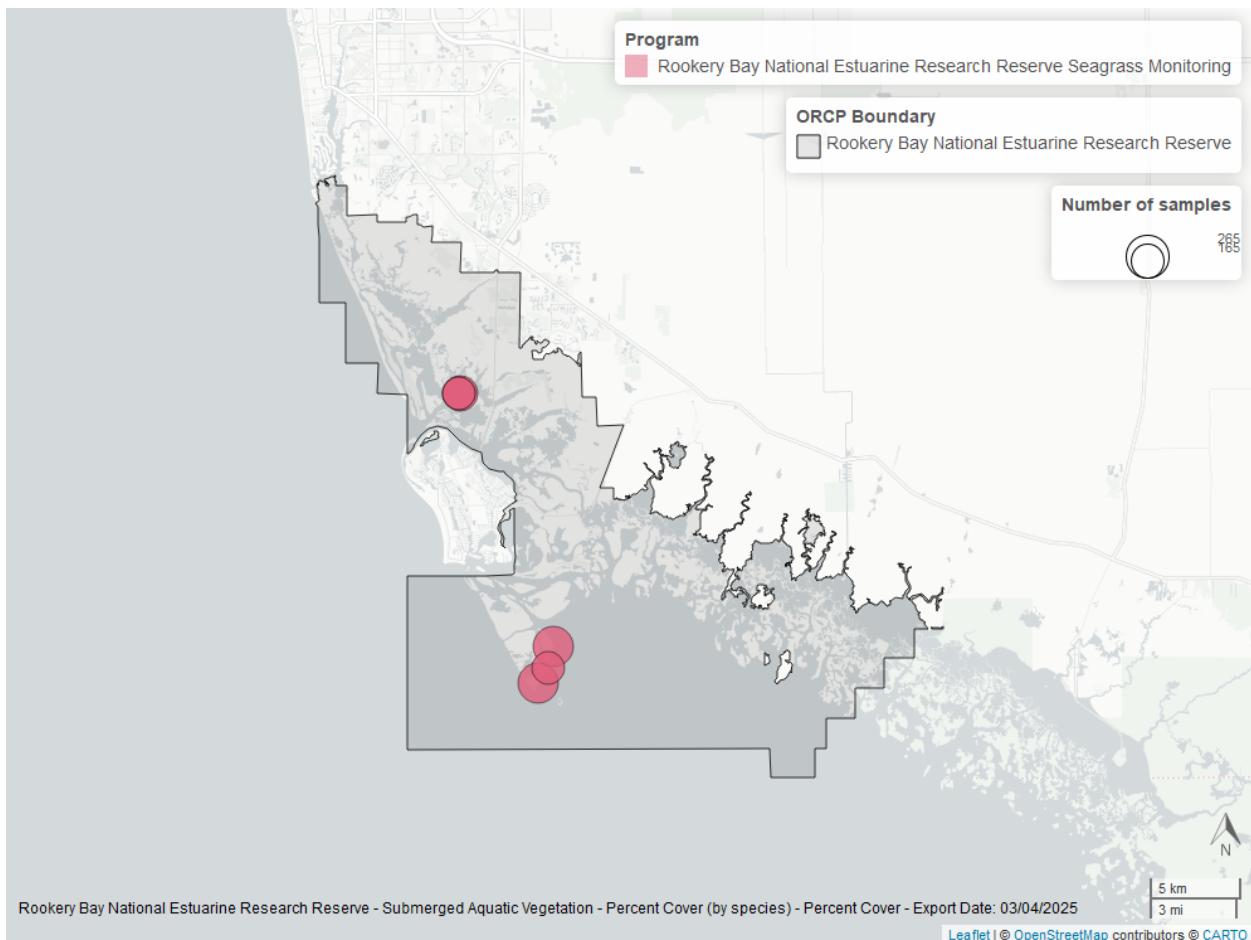


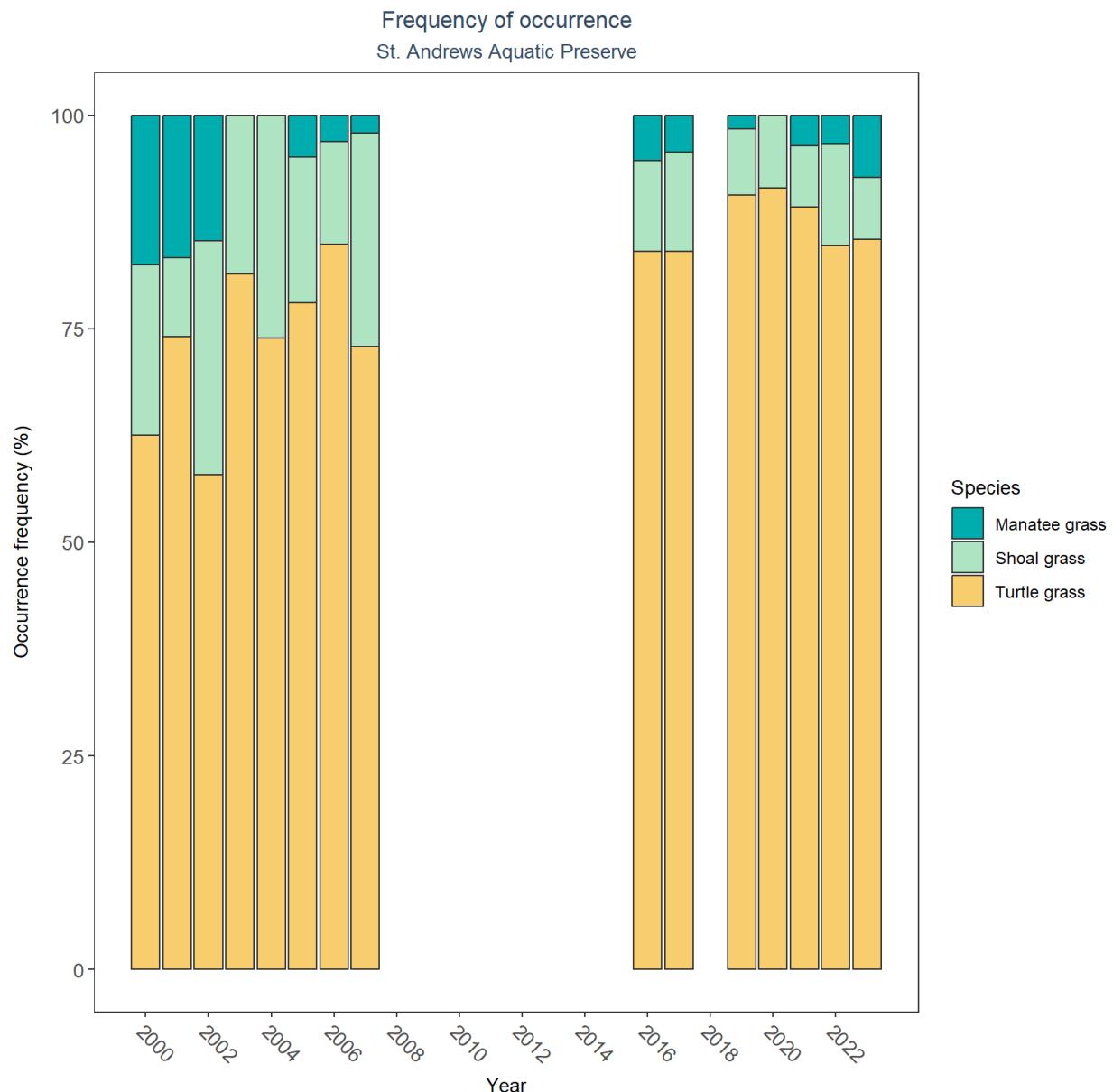
Table 25: SAV LME Results for Rookery Bay National Estuarine Research Reserve

Species	Statistical Trend	Period of Record	LME Intercept	LME Slope	p
Shoal grass	No significant trend	1998 - 2005	33.63	-1.71	0.25
Paddle grass	No significant trend	1998 - 2005	-0.44	0.08	0.36
Star grass	No significant trend	1998 - 2005	3.53	-0.23	0.44
Manatee grass	No significant trend	1998 - 2005	16.10	-1.13	0.40
Turtle grass	No significant trend	1998 - 2005	36.99	-3.14	0.07
Total seagrass	Significantly decreasing trend	1998 - 2005	68.37	-4.52	0.02





St. Andrews Aquatic Preserve



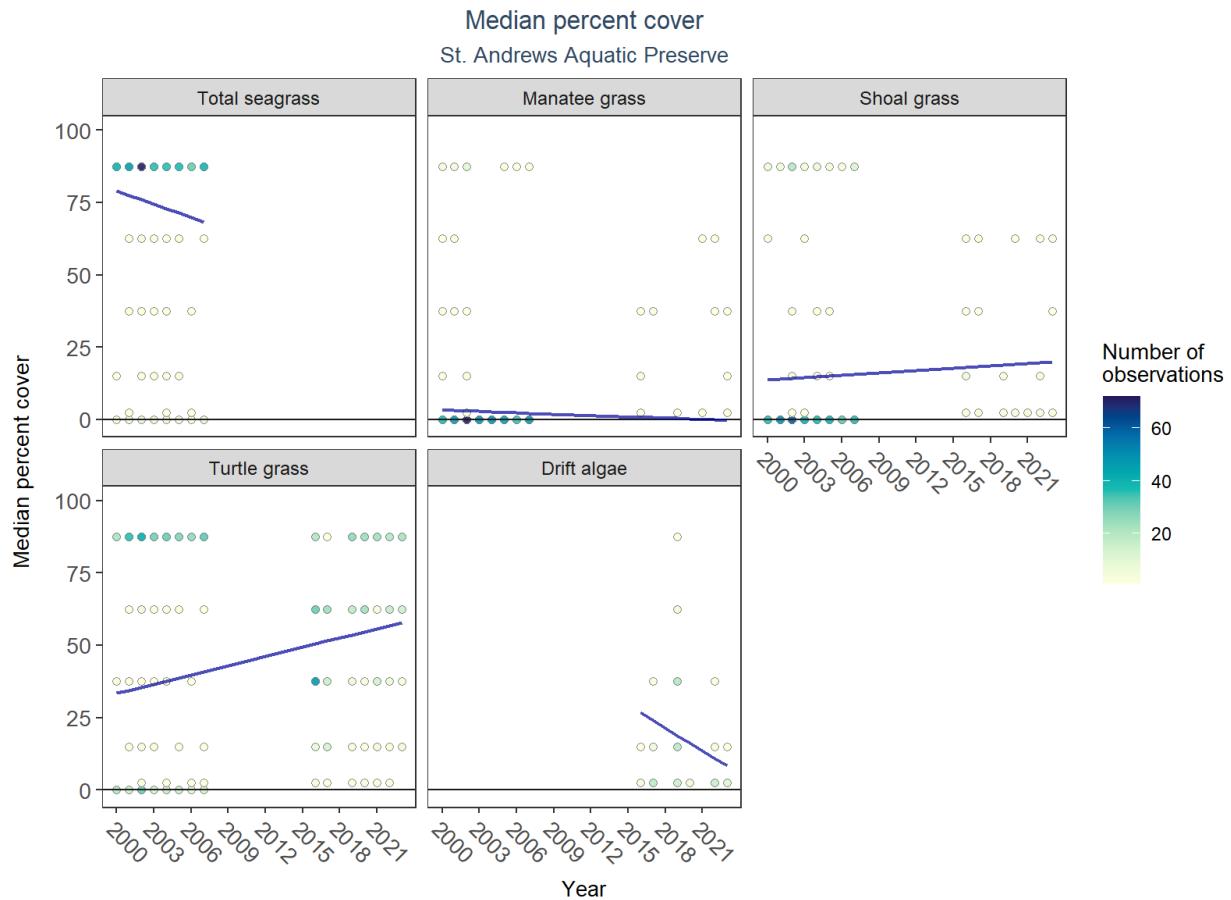
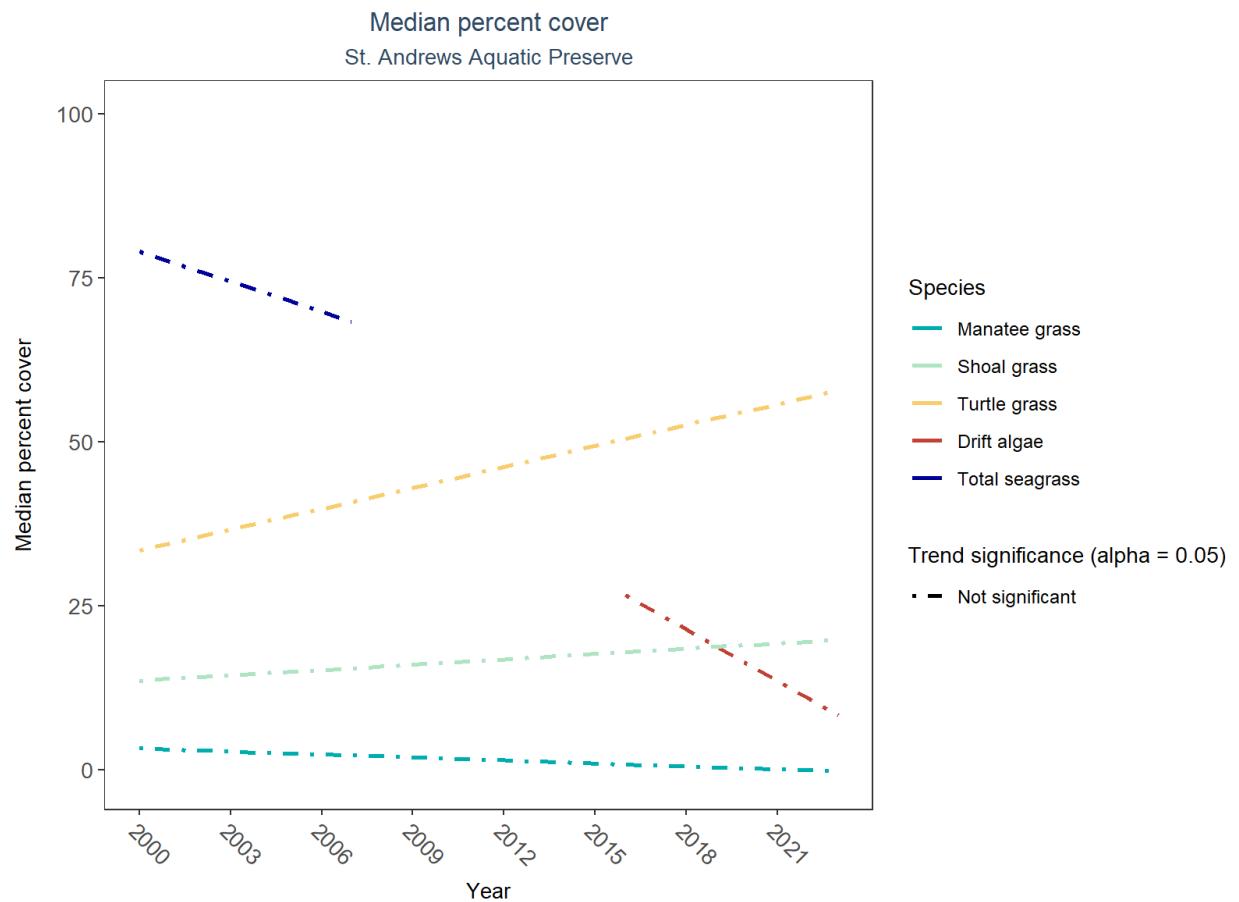
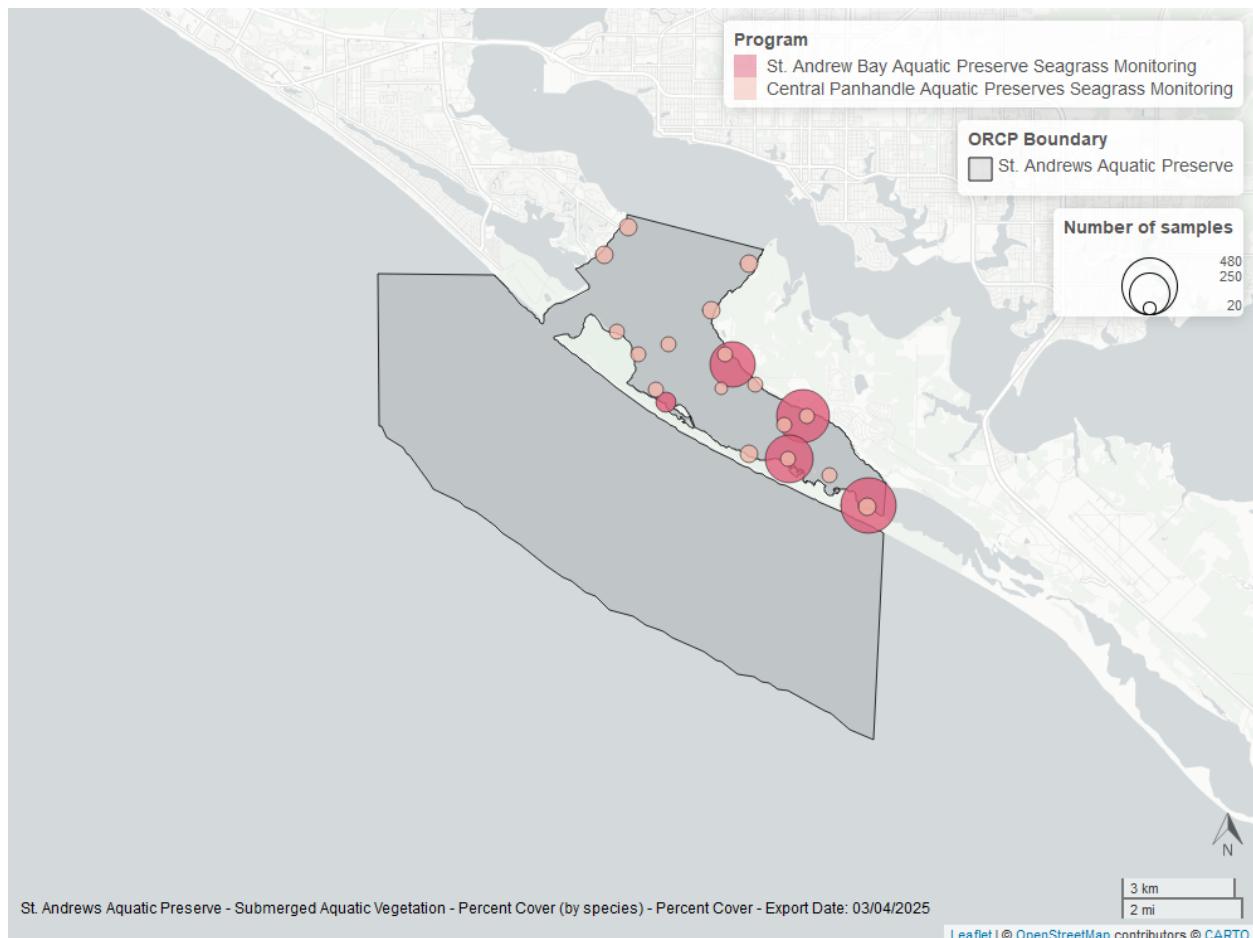


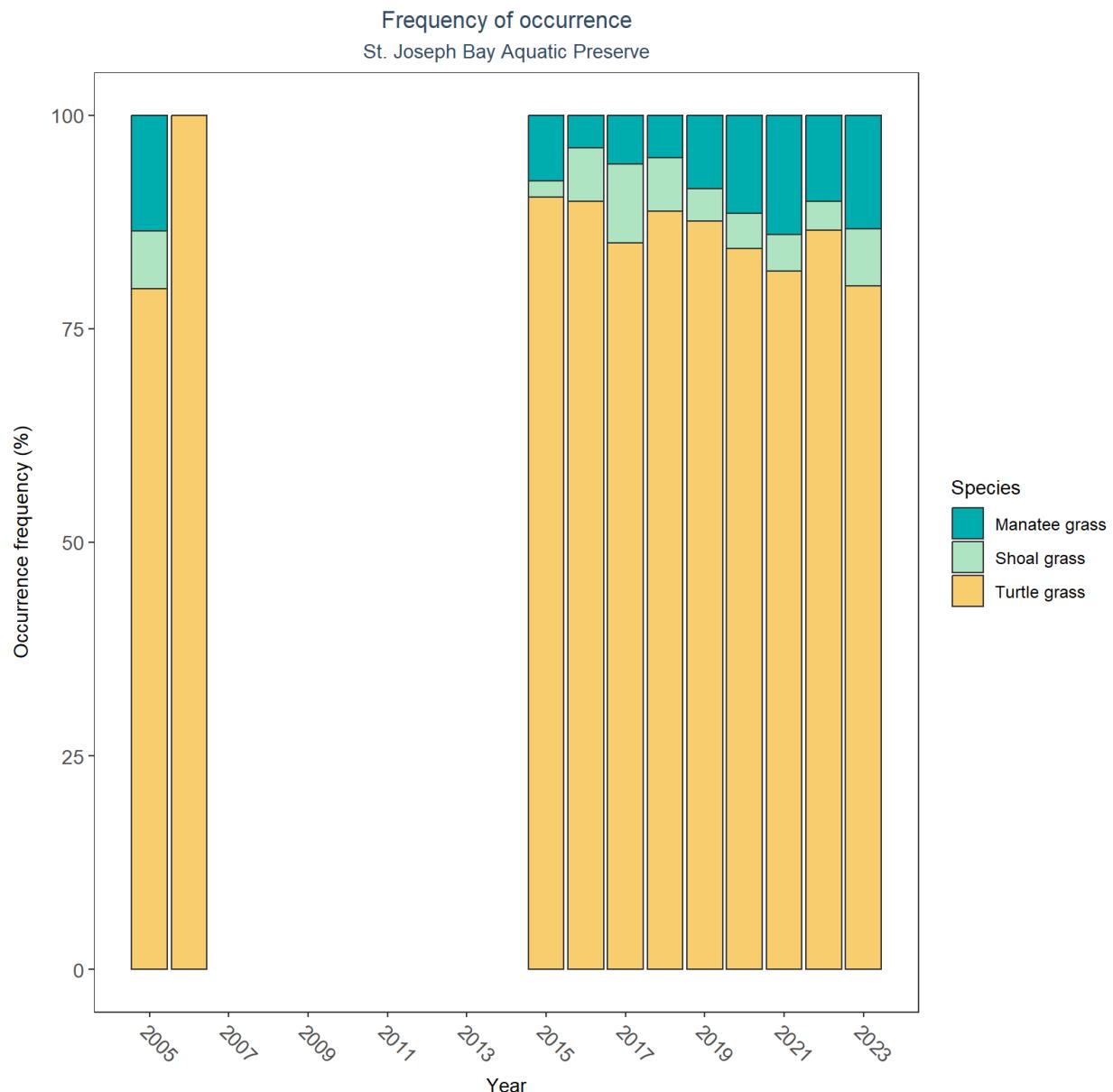
Table 26: SAV LME Results for St. Andrews Aquatic Preserve

Species	Statistical Trend	Period of Record	LME Intercept	LME Slope	p
Drift algae	No significant trend	2016 - 2023	84.42	-2.62	0.07
Shoal grass	No significant trend	2000 - 2023	11.99	0.27	0.49
No grass in quadrat	Model did not fit the available data	-	-	-	-
Manatee grass	No significant trend	2000 - 2023	4.17	-0.15	0.82
Turtle grass	No significant trend	2000 - 2023	27.04	1.06	0.13
Total seagrass	No significant trend	2000 - 2007	88.14	-1.52	0.15





St. Joseph Bay Aquatic Preserve



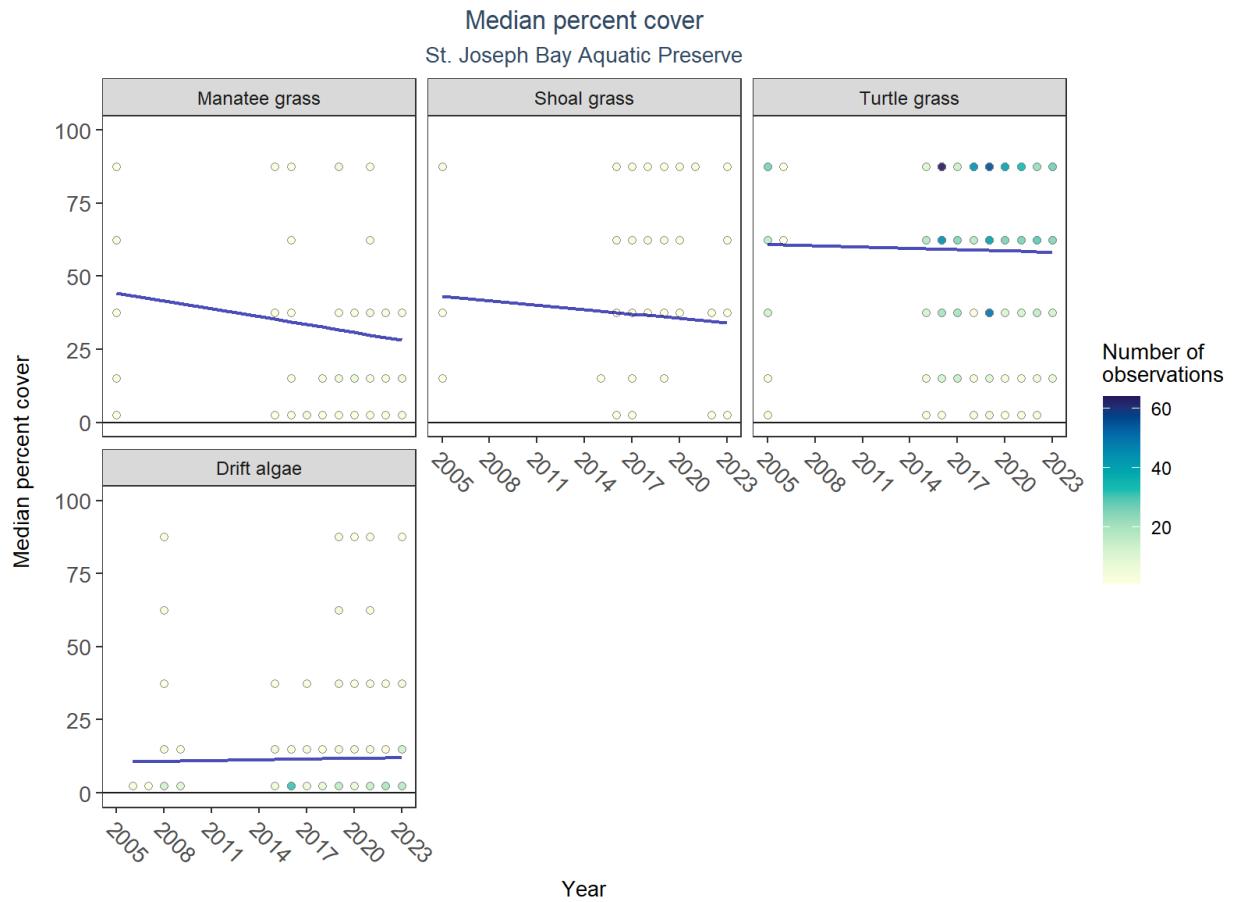
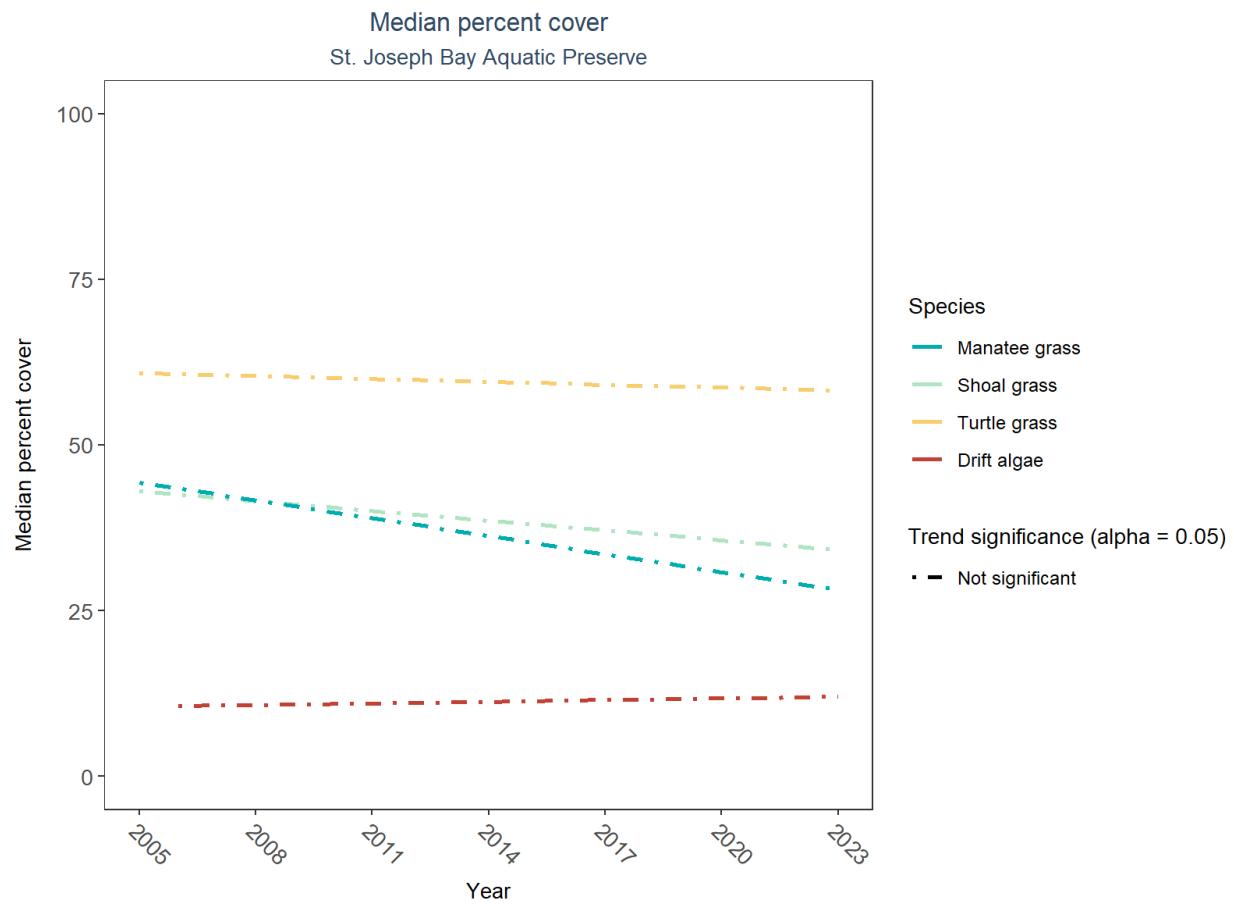
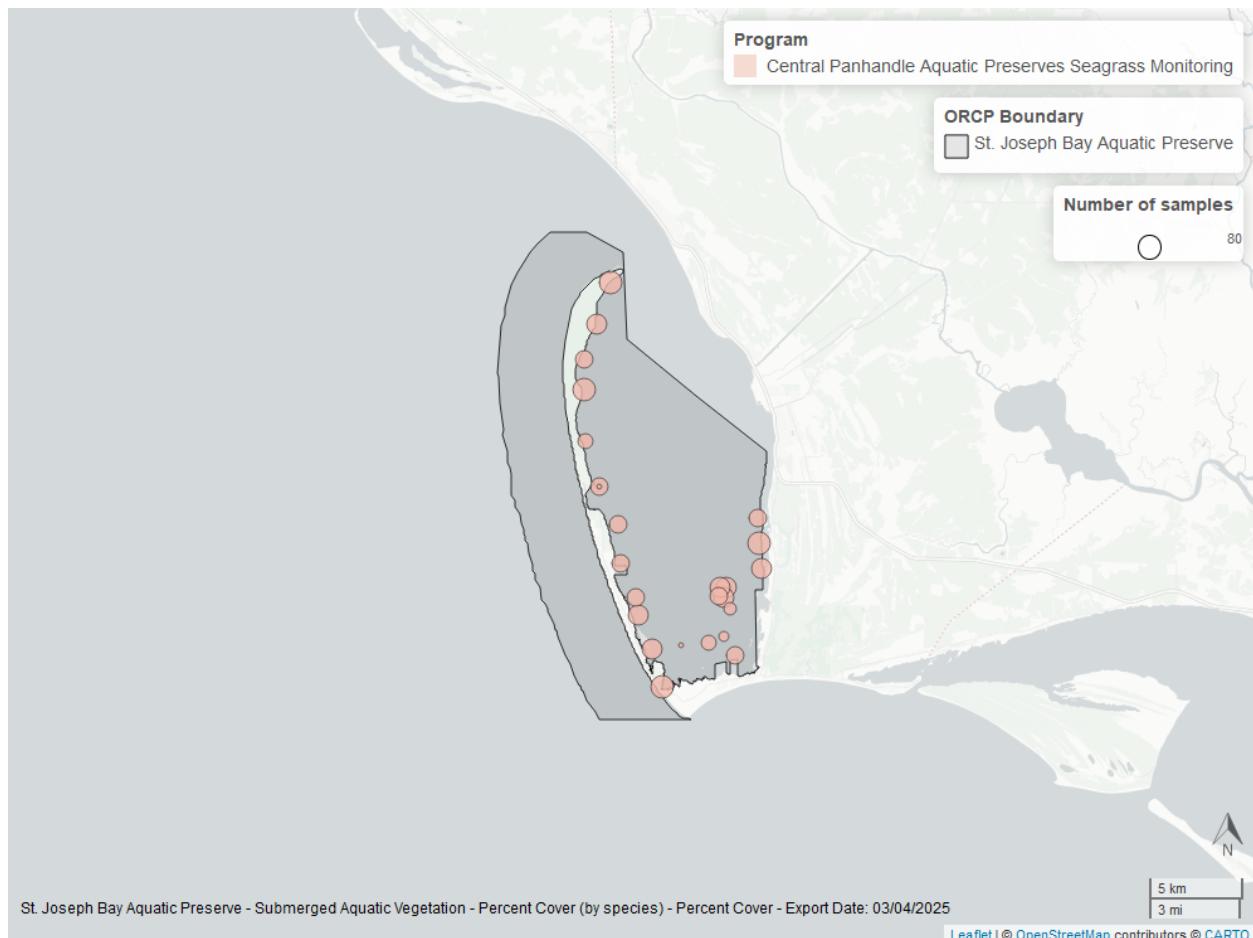


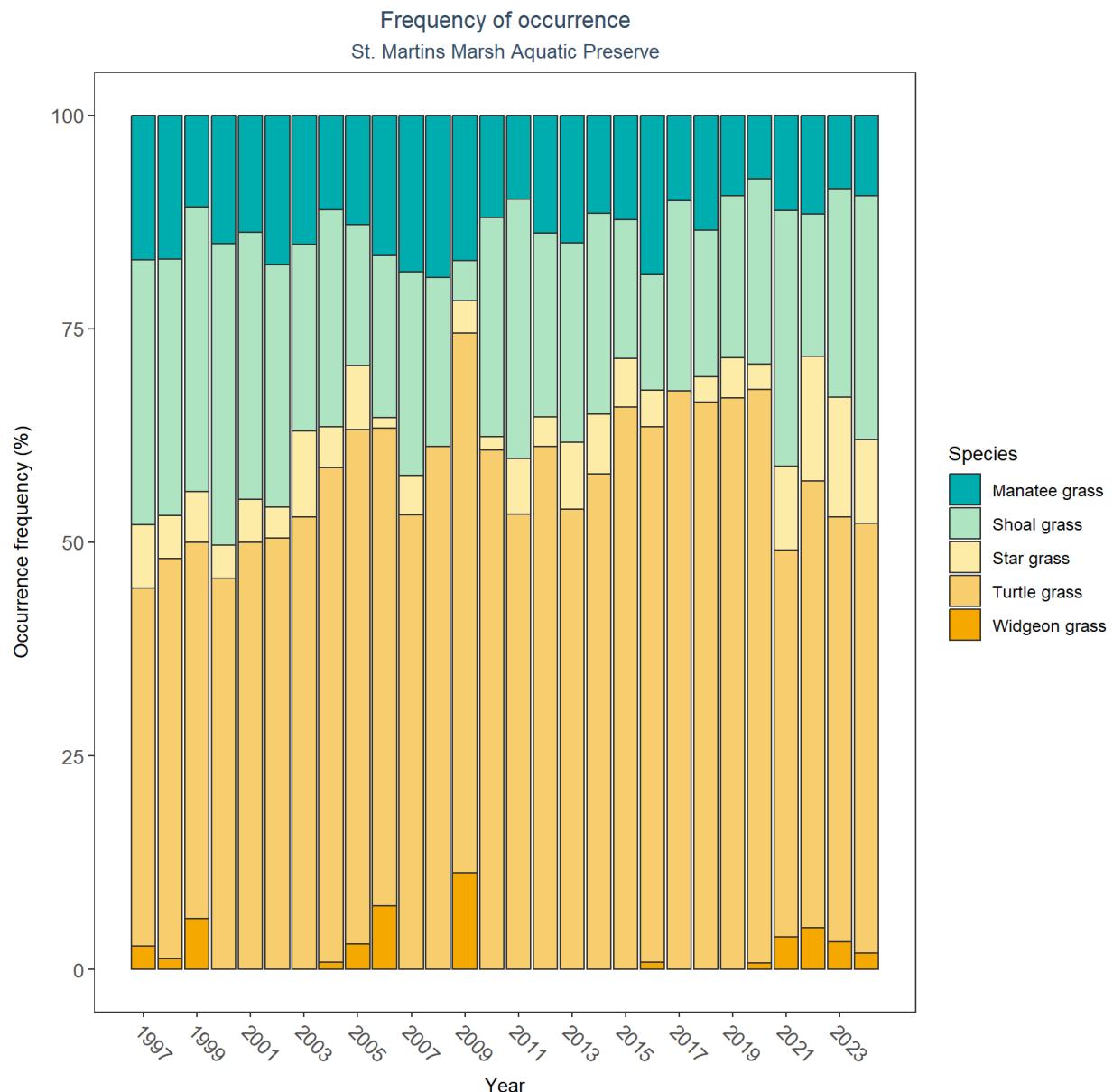
Table 27: SAV LME Results for St. Joseph Bay Aquatic Preserve

Species	Statistical Trend	Period of Record	LME Intercept	LME Slope	p
Drift algae	No significant trend	2006 - 2023	9.61	0.08	0.83
Shoal grass	No significant trend	2005 - 2023	48.45	-0.49	0.50
No grass in quadrat	Insufficient data to calculate trend	-	-	-	-
Manatee grass	No significant trend	2005 - 2023	54.20	-0.90	0.26
Turtle grass	No significant trend	2005 - 2023	62.38	-0.14	0.69





St. Martins Marsh Aquatic Preserve



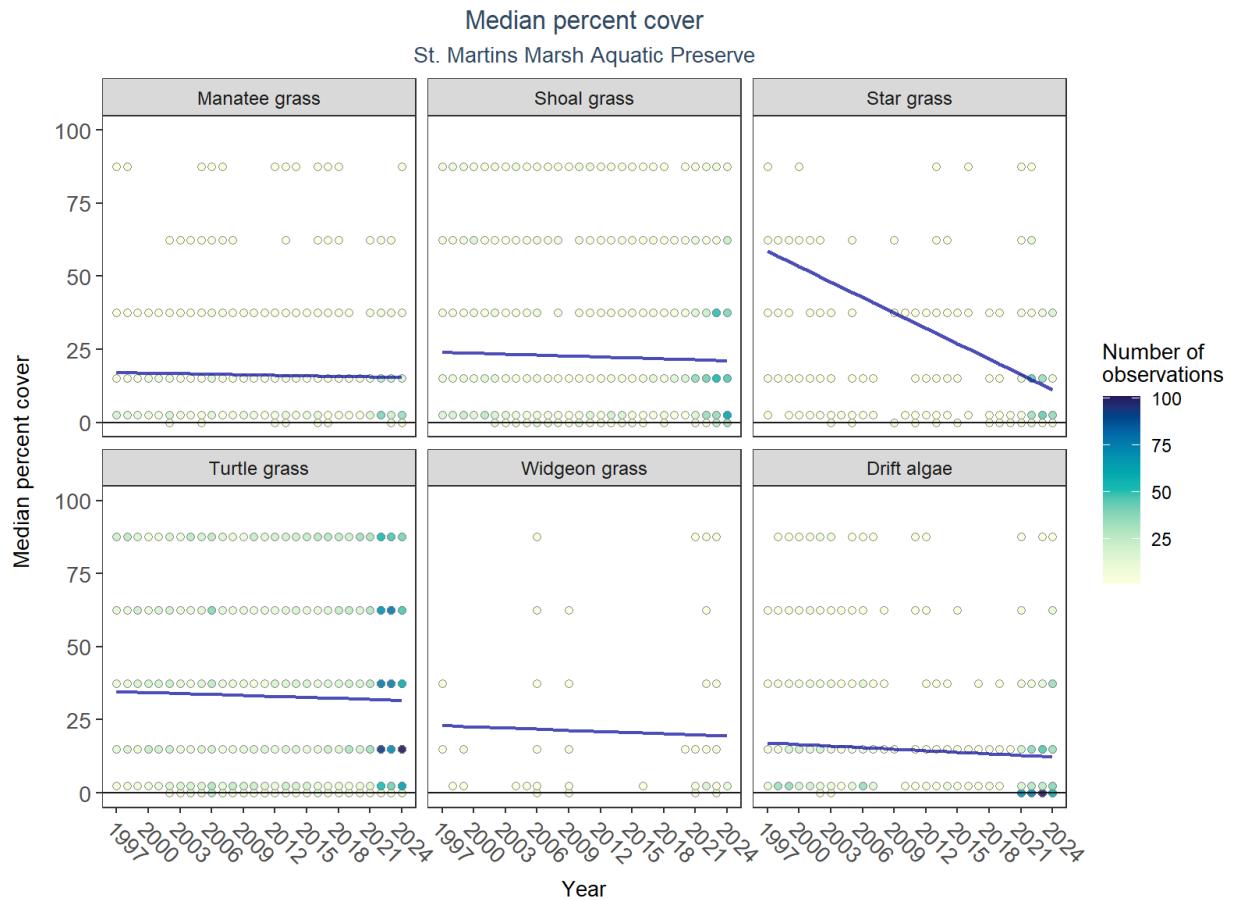
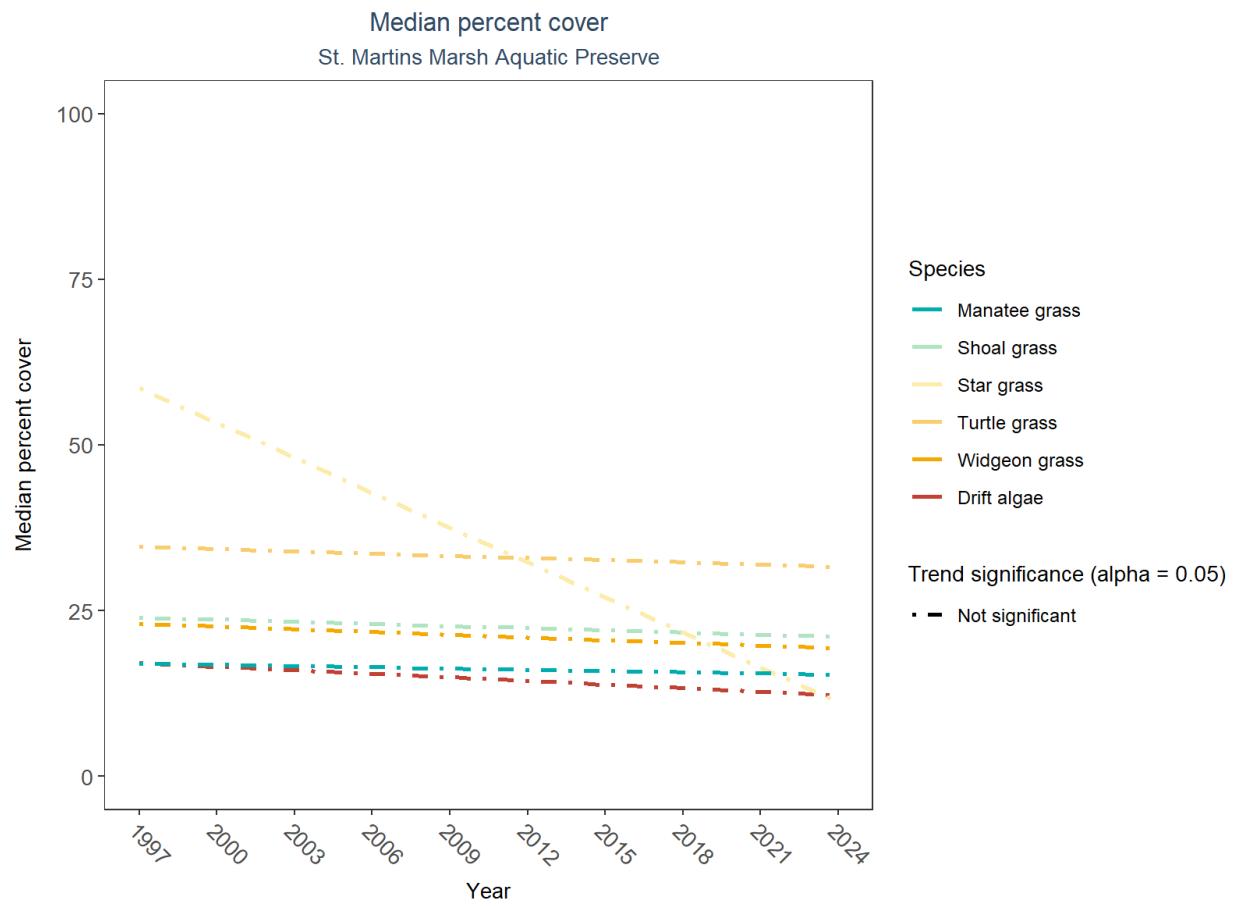
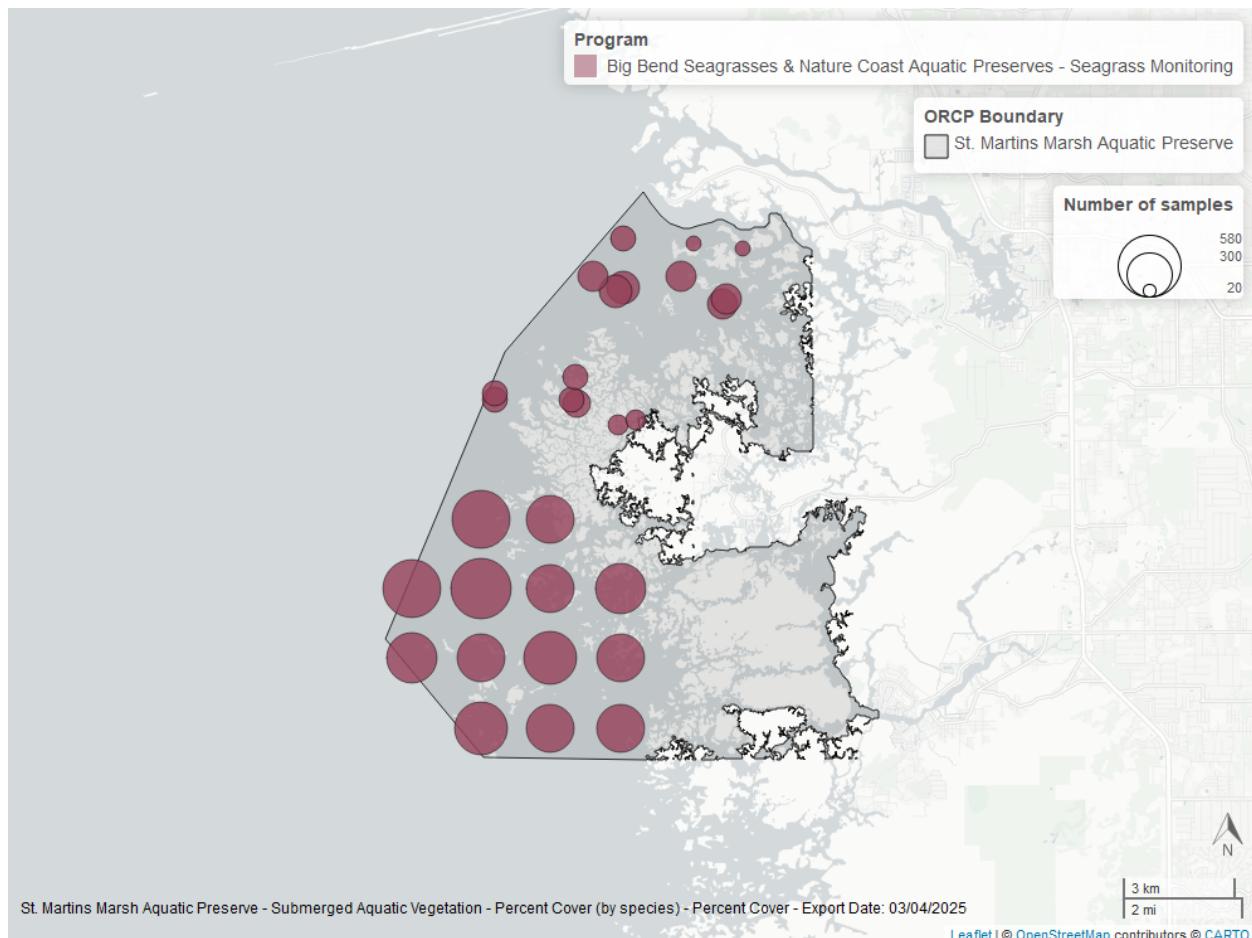


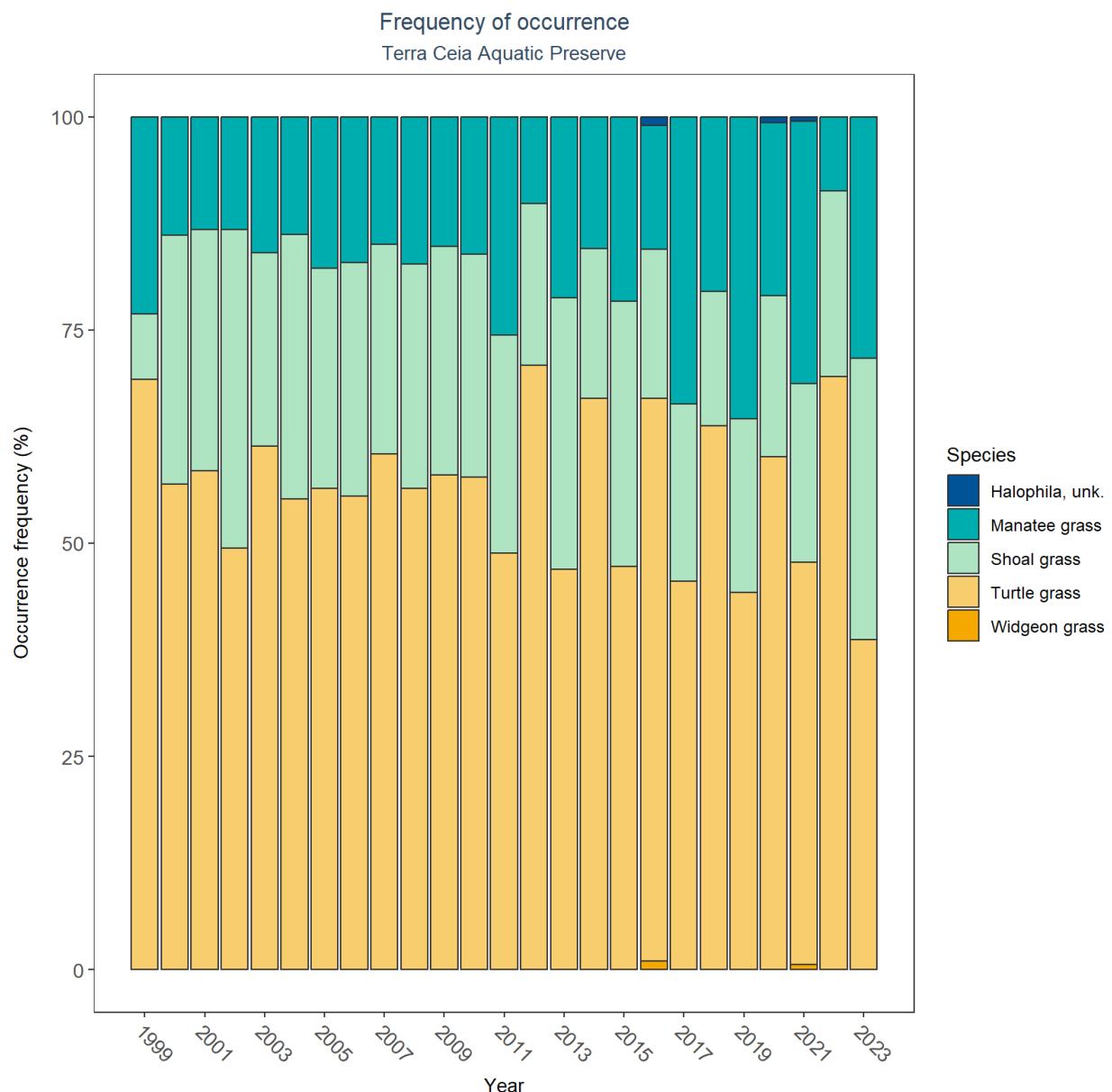
Table 28: SAV LME Results for St. Martins Marsh Aquatic Preserve

Species	Statistical Trend	Period of Record	LME Intercept	LME Slope	p
Drift algae	No significant trend	1997 - 2024	17.60	-0.18	0.21
Shoal grass	No significant trend	1997 - 2024	24.32	-0.11	0.55
Star grass	No significant trend	1997 - 2024	63.88	-1.76	0.09
No grass in quadrat	Model did not fit the available data	-	-	-	-
Widgeon grass	No significant trend	1997 - 2024	23.39	-0.13	0.72
Manatee grass	No significant trend	1997 - 2024	17.22	-0.06	0.74
Turtle grass	No significant trend	1997 - 2024	34.98	-0.11	0.47





Terra Ceia Aquatic Preserve



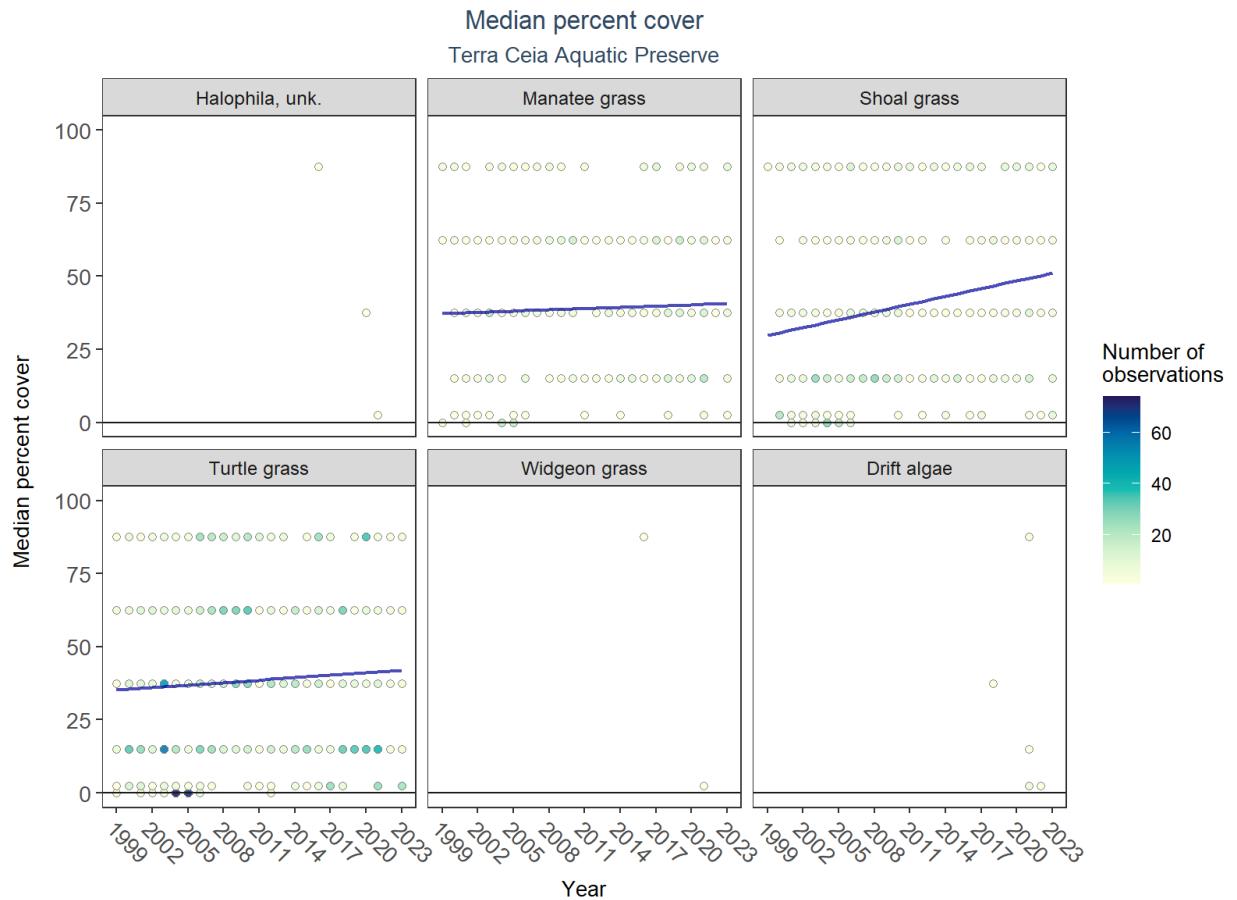
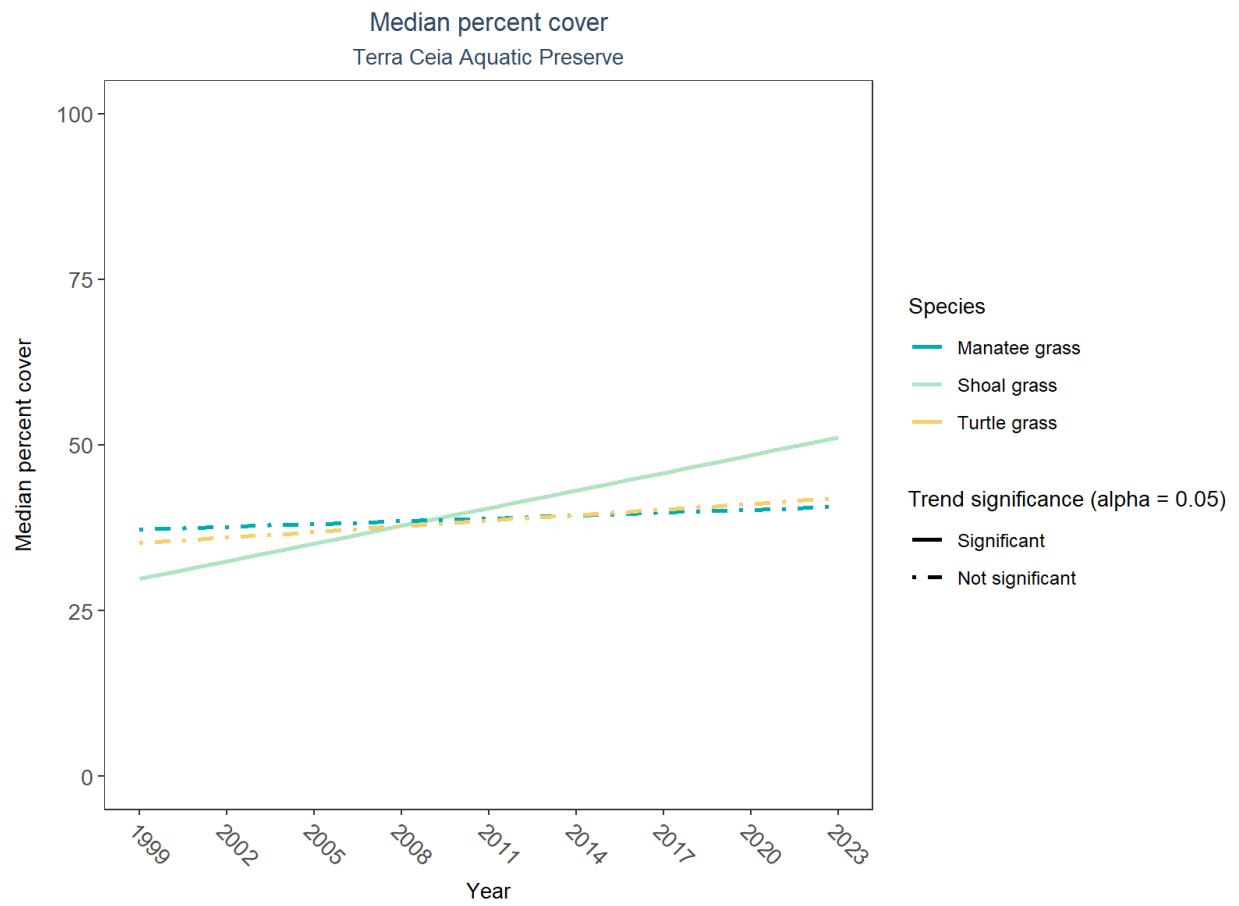
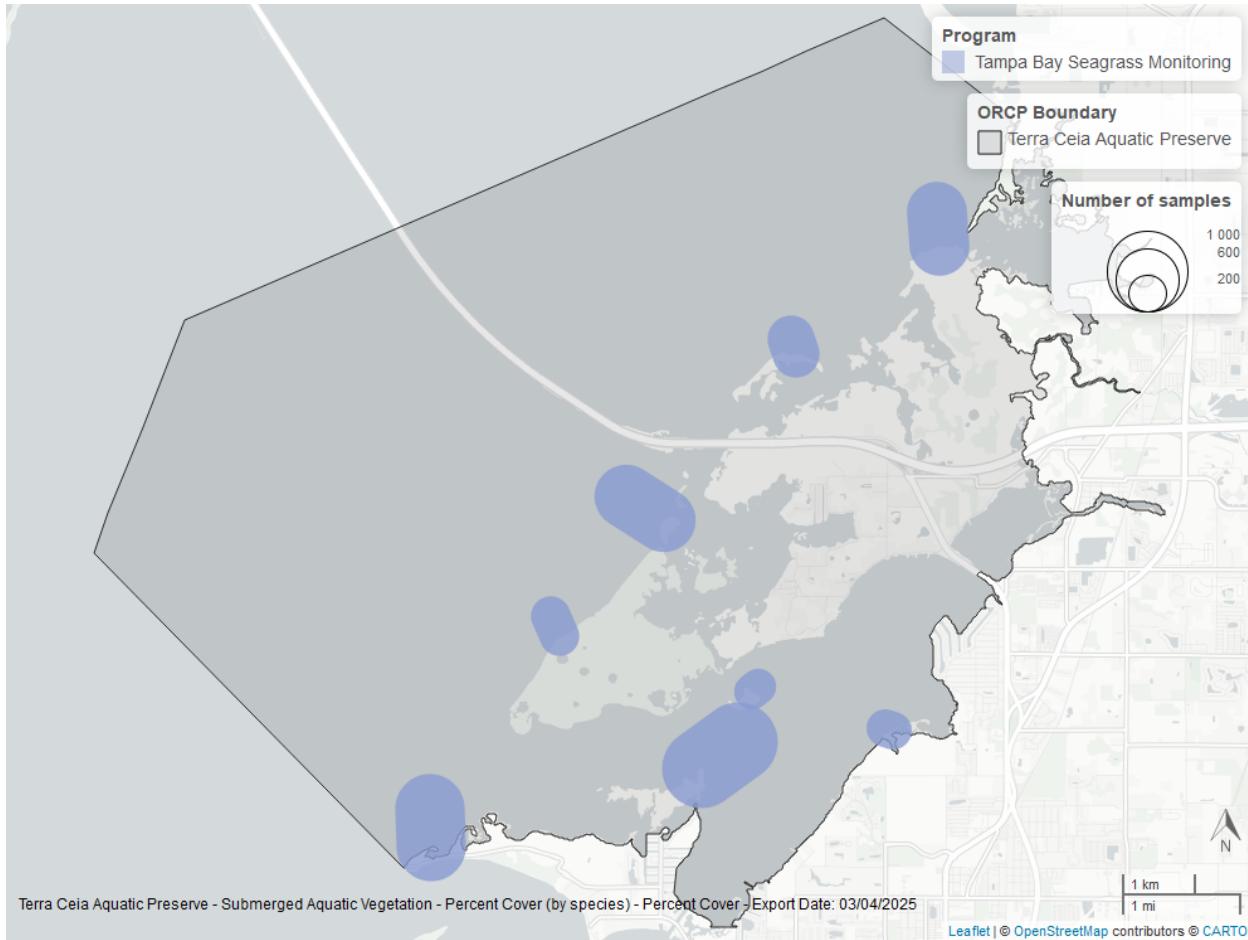


Table 29: SAV LME Results for Terra Ceia Aquatic Preserve

Species	Statistical Trend	Period of Record	LME Intercept	LME Slope	p
Drift algae	Insufficient data to calculate trend	-	-	-	-
Shoal grass	Significantly increasing trend	1999 - 2023	25.36	0.89	0.00
No grass in quadrat	Model did not fit the available data	-	-	-	-
Widgeon grass	Insufficient data to calculate trend	-	-	-	-
Manatee grass	No significant trend	1999 - 2023	36.54	0.14	0.71
Turtle grass	No significant trend	1999 - 2023	33.79	0.28	0.39
Halophila, unk.	Insufficient data to calculate trend	-	-	-	-





Summary of SEACAR_SAV_BB_script_website.R

- Objective: Import and format SAV data, create summary plots and maps of changes over time, model changes over time using Bayesian and mixed-effects models. Results are separate for each managed area, species, and parameter (e.g., Braun Blanquet, percent cover, etc.).
- Packages: bayesplot, brms, broom.mixed, data.table, grid, gridExtra, gtable, nlme, scales, sf, tictoc, tidybayes, tidyverse
- File inputs: All_SAV_Parameters-2024-Sep-19.txt, seacar_dbo_SampleLocation_Point.shp, seacar_dbo_SampleLocation_Line.shp, ORCP_Managed_Areas.shp, Counties_-_Detailed_Shoreline.shp, MApolygons_corners.csv
- Steps by line number:
 - 1 - 40: load libraries and import SAV file, create necessary sub-folders.
 - 43 - 132: format SAV data including renaming columns, removing NA values, and reformatting abundance/cover values. For the latter, this included removal of NA values and those out of range, and ensuring appropriate values for Braun Blanquet, modified Braun Blanquet, percent occurrence, and percent cover.
 - 136: Import ManagedArea.csv to obtain abbreviated ManagedAreaNames.
 - 139 - 193: function for plotting model predictions (multiplots).
 - 196 - 288: function for plotting model predictions with simplified trendlines on a single plot (trendplots).
 - 292 - 307: function used throughout script to allow for swift modification of species labels between “common” and “scientific” names. The script defaults to using scientific throughout the backend (i.e. .rds objects with species names default to scientific), with the usenames variable (line 468)

- converting the display of species names to the desired display type.
- 310: EDA variable to specify what the script should produce. Setting to “plots” creates data exploration plots.
 - 313: `scope_plots` variable can be set to TRUE or FALSE. Set to TRUE to render spatio-temporal scope plots for each ManagedArea. Resulting plots are placed in the ‘output/Figures/SAV_temporal_scope_plots/’ folder.
 - 323 - 324: create failedmods data table to store failed model results.
 - 327 - 499: setup parameter list and objects for looping through parameters to create models and summary output, parameters include Braun Blanquet, median percent cover, visual percent cover, percent occurrence, frequency of occurrence. Write results to output .xlsx files.
 - * 351 - 395: setting up palettes for both species (`spcols`) and ProgramNames (`prcols`).
 - 517 - 1192: loop through parameters to create models and summary output, the following is an outline of steps in this loop.
 - * 530 - 1518: loop through managed areas using parameter from outside loop
 - * 539 - 553: create and save plot of parameter score for managed area over time by species
 - * 555 - 568: create and save plot of parameter score for managed area over time by program ID
 - * 570 - 583: create and save plot of parameter score for managed area over time grouped by species, by program ID
 - * 585 - 598: create and save plot of quadrat sizes for managed area over time by species
 - * 600 - 613: create and save plot of quadrat sizes for managed area over time by program ID
 - * 615 - 628: create and save plot of method for managed area over time by species
 - * 630 - 643: create and save plot of method for managed area over time by program ID
 - * 645 - 659: create and save plot of method for managed area by quadrat size and species
 - * 661 - 675: create and save plot of method for managed area by quadrat size and program ID
 - * 677 - 707: create and save plots of grid values over time by species and program ID if data available
 - * 709 - 739: create and save plots of depth values over time by species and program ID if data available
 - * 743 - 759: create and save a plot legend of species
 - * 762 - 785: loop through species to create and save a plot of parameter score over time
 - * 787 - 808: create and save a plot of totals for the species of parameter score over time
 - * 811 - 827: create and save a plot legend of species
 - * 830 - 853: loop through species to create and save a plot of parameter score as boxplots over time
 - * 855 - 875: create and save a plot of boxplots for the species of parameter score over time
 - * 898 - 908: setup empty objects for model results
 - * 912 - 1029: Loop through species to fit models, with separate exception statements for different parameters. The modeling workflow is similar for each parameter, with minor exceptions. The general goal of each is to assess trends in a parameter over time for a particular species and managed area. Each workflow includes error handling if models did not converge, produces summary tables of model fit, and summary plots showing model result. The models vary in the Gaussian distribution family for the response variable depending on parameter. Random effects (e.g., for LocationID) are used for all models.
 - * 1033 - 1124: create base plot of seagrass percent cover data over time for managed area. Add model fits if applicable, and saves object
 - 1036 - 1046: reads and sets modeled data for plots
 - * 1127 - 1185: create and save barplots of parameter results for managed area over time by species, only for Braun Blanquet and percent cover, save model results from prior loops
 - * 1197 - 1265: export .png of all plot types, setting height dynamically for multiplots.
 - * 1273 - 1277: zip all images into subfolders and create `SAV_Figures_[usenames].zip` where `usenames` is either “scientific” or “common” based on the `usenames` variable setting.