Nature Coast Aquatic Preserve

SEACAR Water Quality Analysis

Last compiled on 30 September, 2025

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Indicators

Nutrients

Total Nitrogen - Discrete

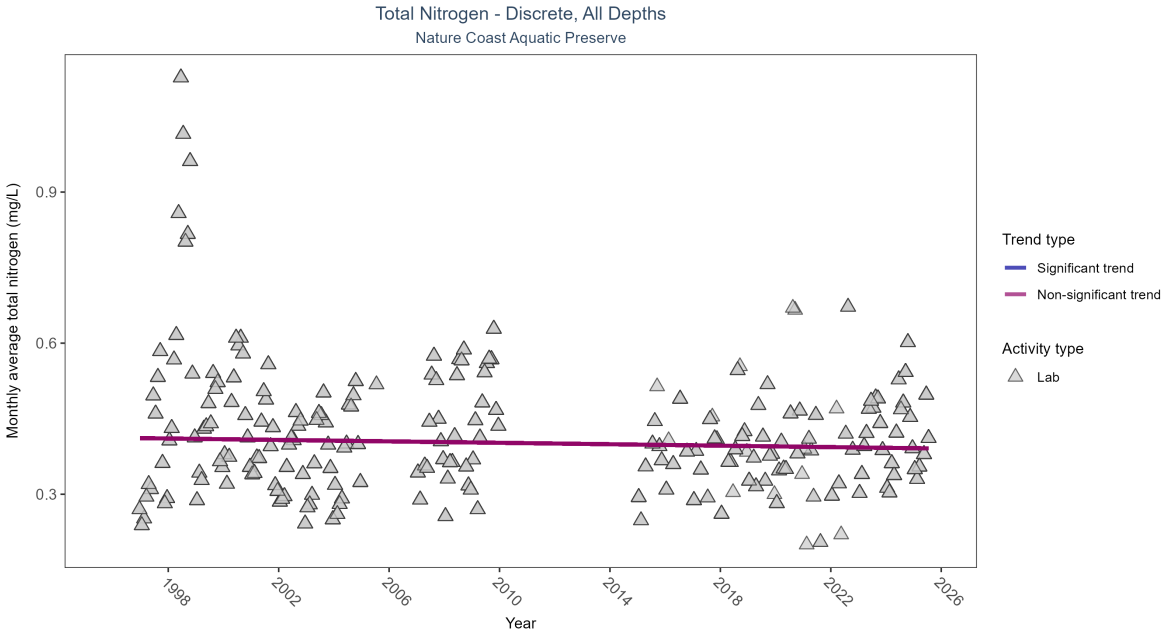

Figure 1: Scatter plot of monthly average total nitrogen over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only nitrogen values obtained from laboratory analyses (triangles) are included in the plot.

Table 1: Seasonal Kendall-Tau Results for - Total Nitrogen

Activity Type	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
Lab	No significant trend	7068	24	1996 - 2025	0.39	-0.04885	0.41211	-0.00071	0.2353

Total nitrogen showed no detectable trend between 1996 and 2025.

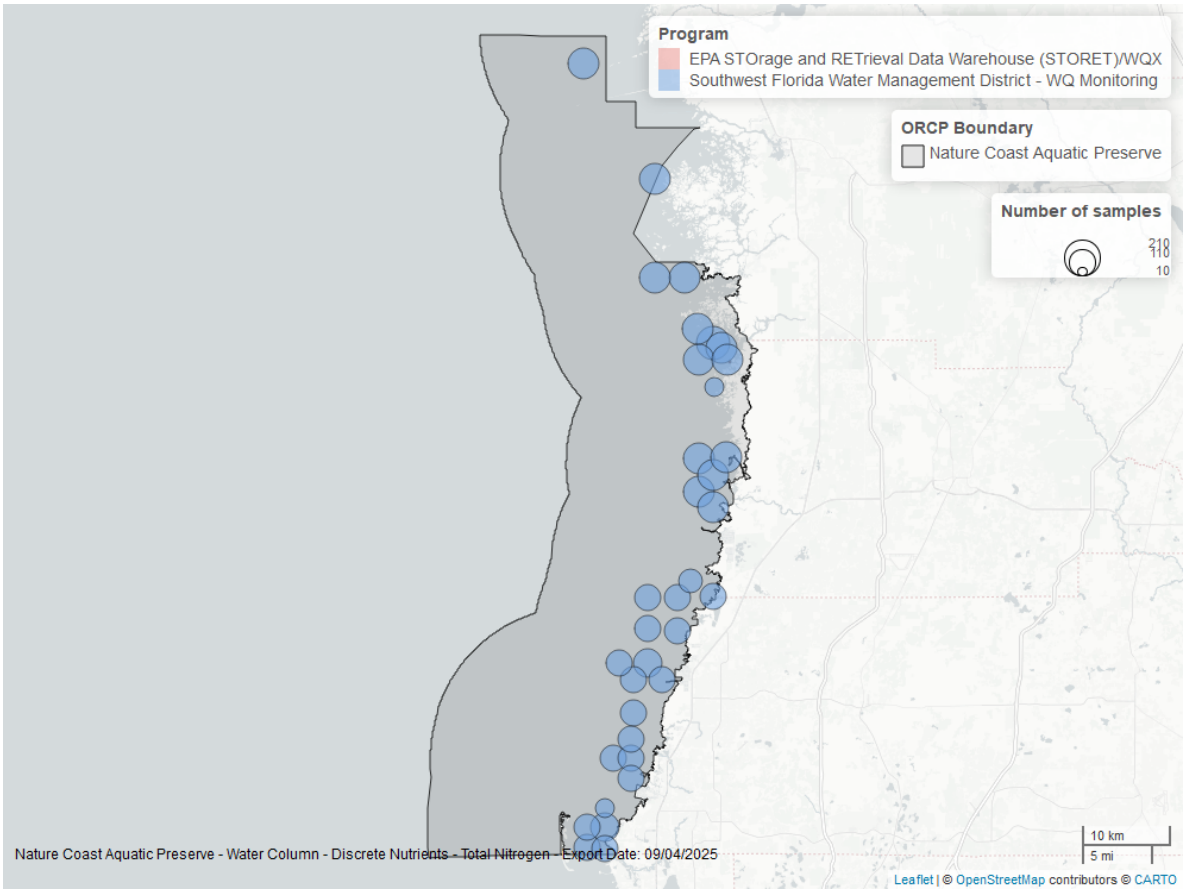

Figure 2: Map showing location of discrete water quality sampling locations within the boundaries of *Nature Coast Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Total Phosphorus - Discrete

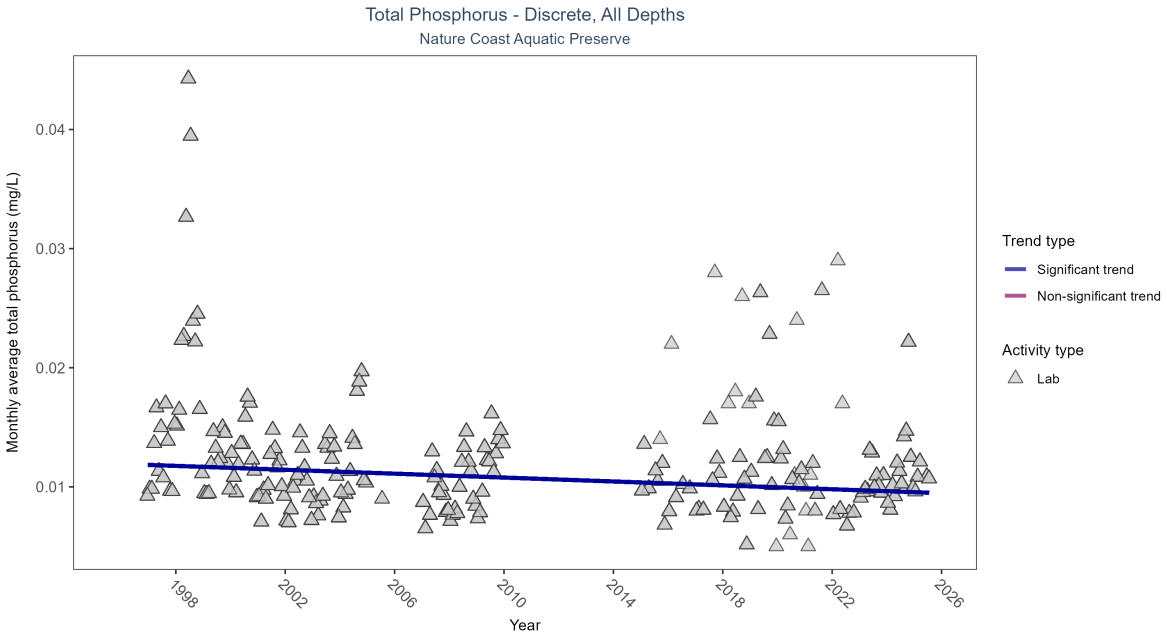

Figure 3: Scatter plot of monthly average total phosphorus over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only phosphorus values obtained from laboratory analyses (triangles) are included in the plot.

Table 2: Seasonal Kendall-Tau Results for - Total Phosphorus

Activity Type	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
Lab	Significantly decreasing trend	7060	24	1996 - 2025	0.009	-0.1563	0.01193	-0.00008	7e-04

Monthly average total phosphorus decreased by less than 0.01 mg/L per year.

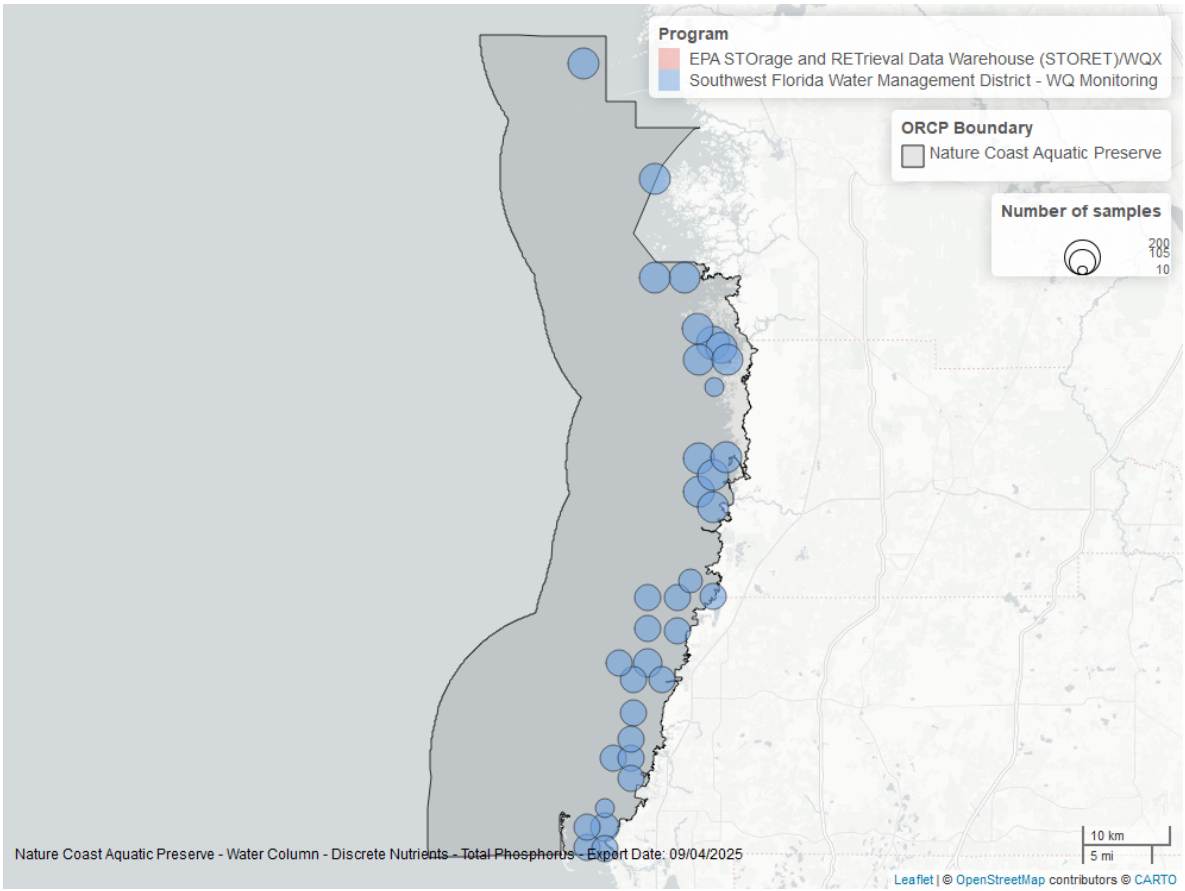

Figure 4: Map showing location of discrete water quality sampling locations within the boundaries of *Nature Coast Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Water Quality

Dissolved Oxygen - Discrete

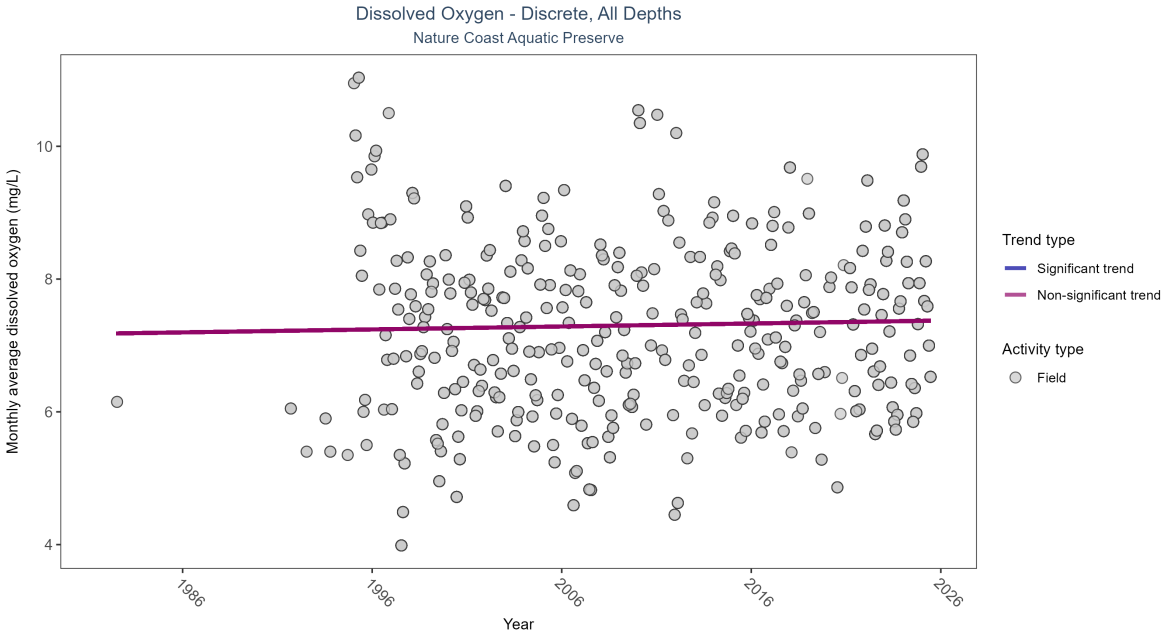

Figure 5: Scatter plot of monthly average dissolved oxygen over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only dissolved oxygen values measured in the field (circles) are included in the plot.

Table 3: Seasonal Kendall-Tau Results for - Dissolved Oxygen

Activity Type	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
Field	No significant trend	10418	36	1982 - 2025	7.2	0.03674	7.17883	0.00446	0.3497

Dissolved oxygen showed no detectable trend between 1982 and 2025.

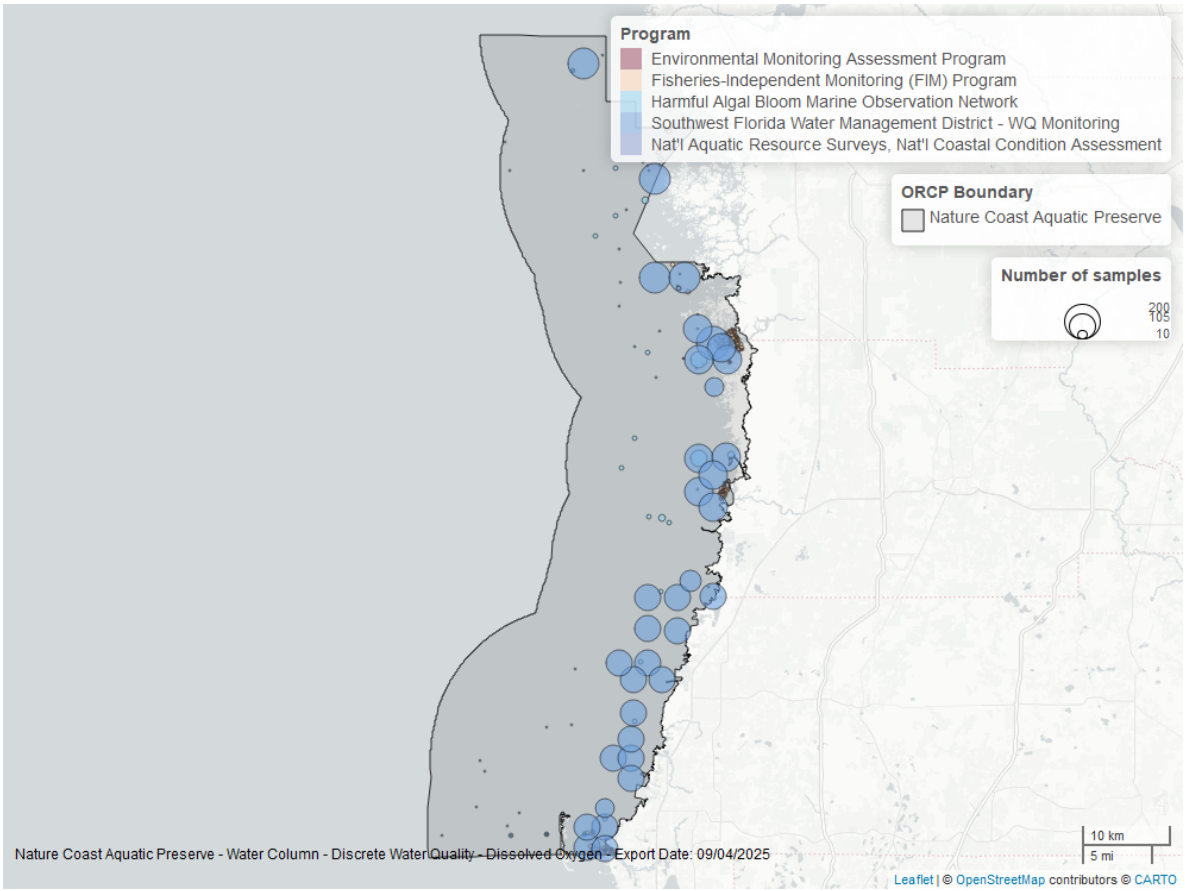

Figure 6: Map showing location of discrete water quality sampling locations within the boundaries of *Nature Coast Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Dissolved Oxygen - Continuous

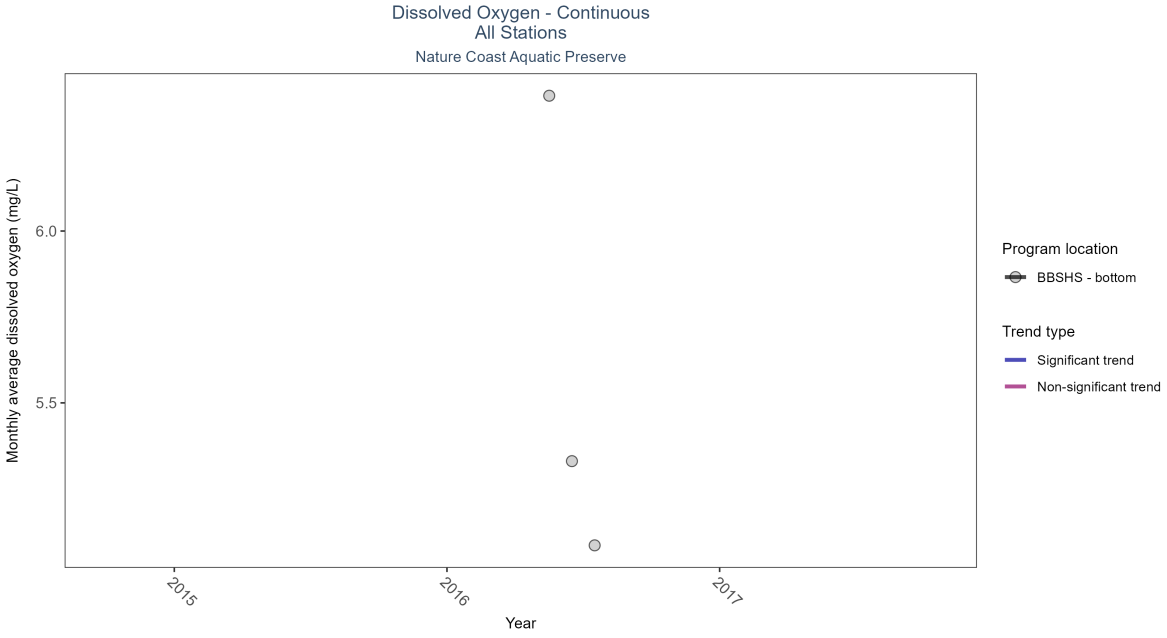

Figure 7: Scatter plot of monthly average dissolved oxygen over time at continuously monitored program locations. Each location is analyzed separately, with significant (blue) or non-significant (magenta) trend lines shown for time series that included five or more years of observations.

Table 4: Seasonal Kendall-Tau Results - Dissolved Oxygen

Program Location	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
BBSHS	Insufficient data to calculate trend	6555	1	2016 - 2016	5.7	-	-	-	-

There was insufficient data to fit a model for one location.

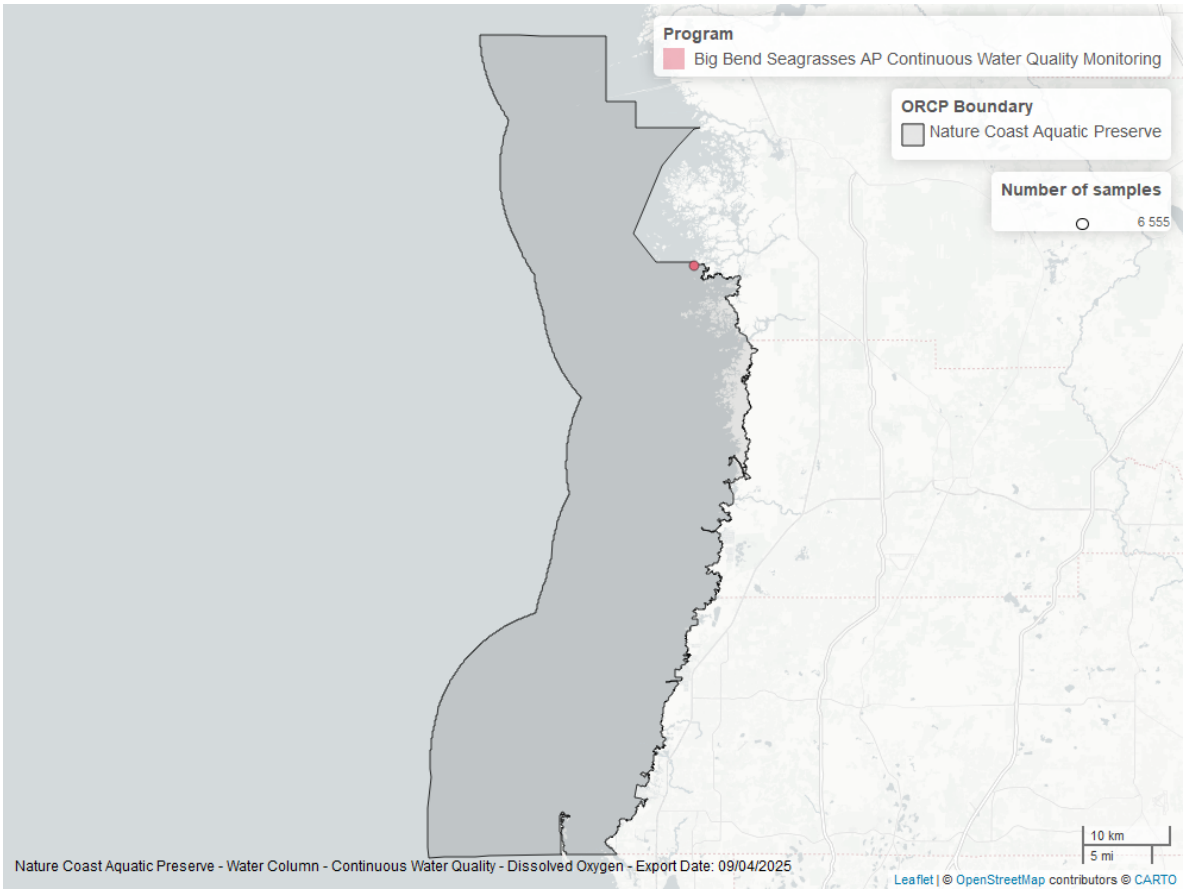

Figure 8: Map showing location of dissolved oxygen continuous water quality sampling locations within the boundaries of *Nature Coast Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Dissolved Oxygen Saturation - Discrete

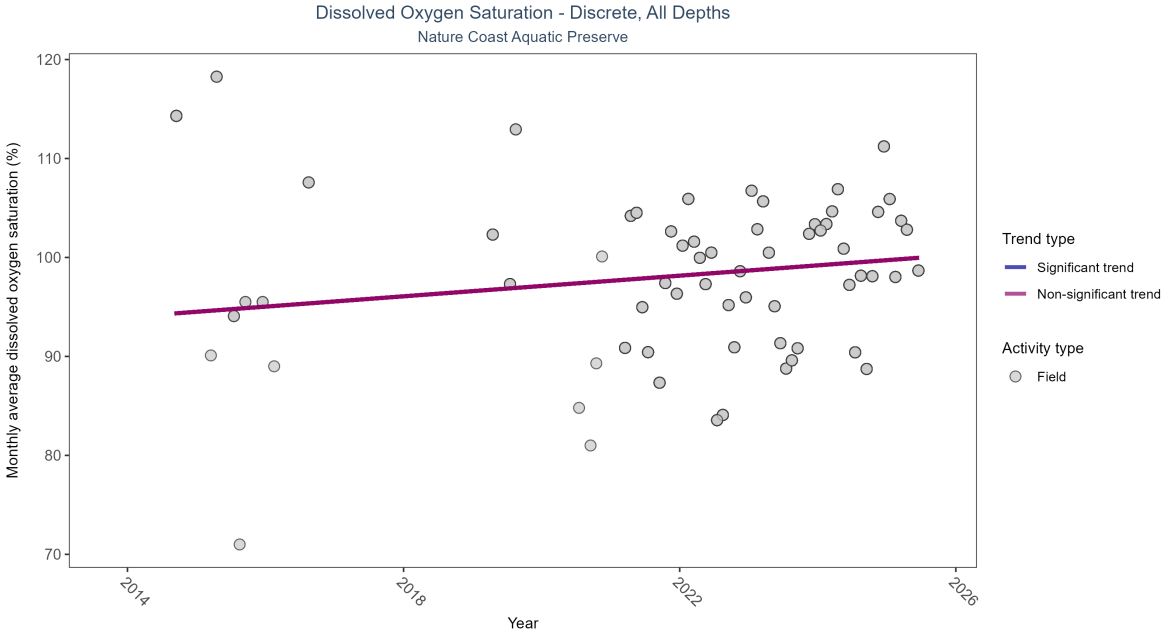

Figure 9: Scatter plot of monthly average dissolved oxygen saturation over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only dissolved oxygen saturation values measured in the field (circles) are included in the plot.

Table 5: Seasonal Kendall-Tau Results for - Dissolved Oxygen Saturation

Activity Type	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
Field	No significant trend	3010	10	2014 - 2025	100.2	0.13538	93.98855	0.52143	0.4751

Dissolved oxygen saturation showed no detectable trend between 2014 and 2025.

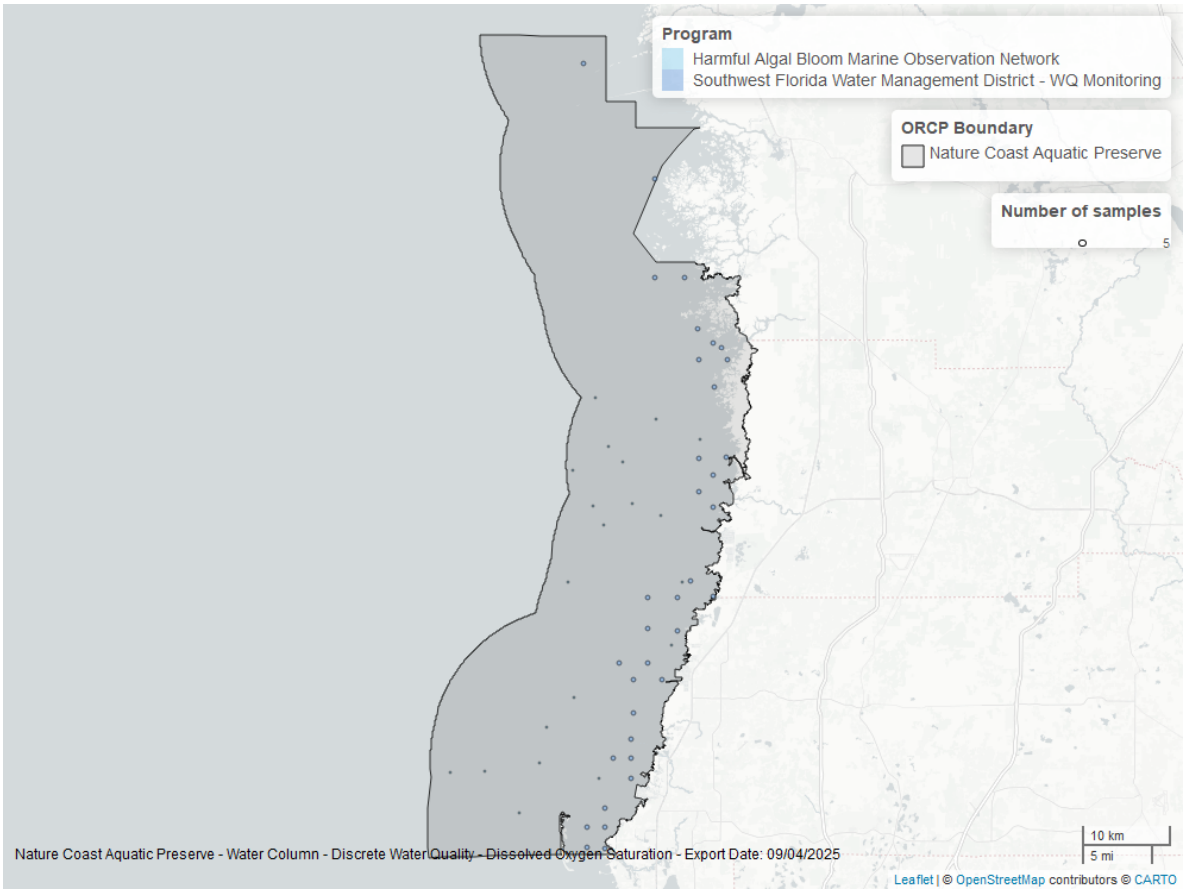

Figure 10: Map showing location of discrete water quality sampling locations within the boundaries of *Nature Coast Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Dissolved Oxygen Saturation - Continuous

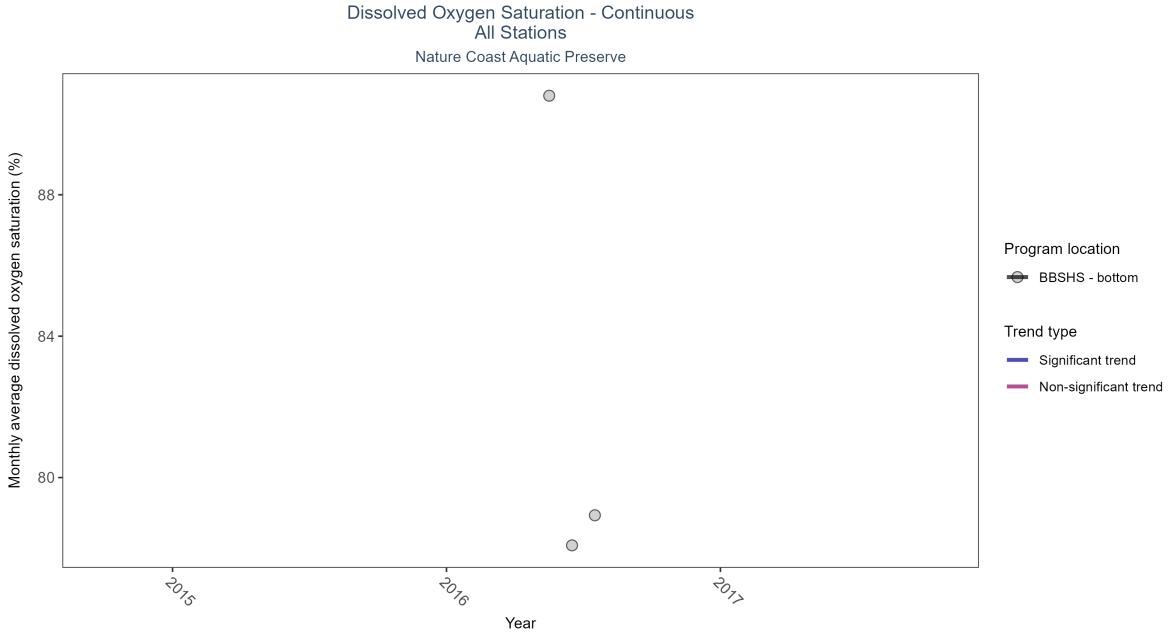

Figure 11: Scatter plot of monthly average dissolved oxygen saturation over time at continuously monitored program locations. Each location is analyzed separately, with significant (blue) or non-significant (magenta) trend lines shown for time series that included five or more years of observations.

Table 6: Seasonal Kendall-Tau Results - Dissolved Oxygen Saturation

Program Location	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
BBSHS	Insufficient data to calculate trend	6555	1	2016 - 2016	82.6	-	-	-	-

There was insufficient data to fit a model for one location.

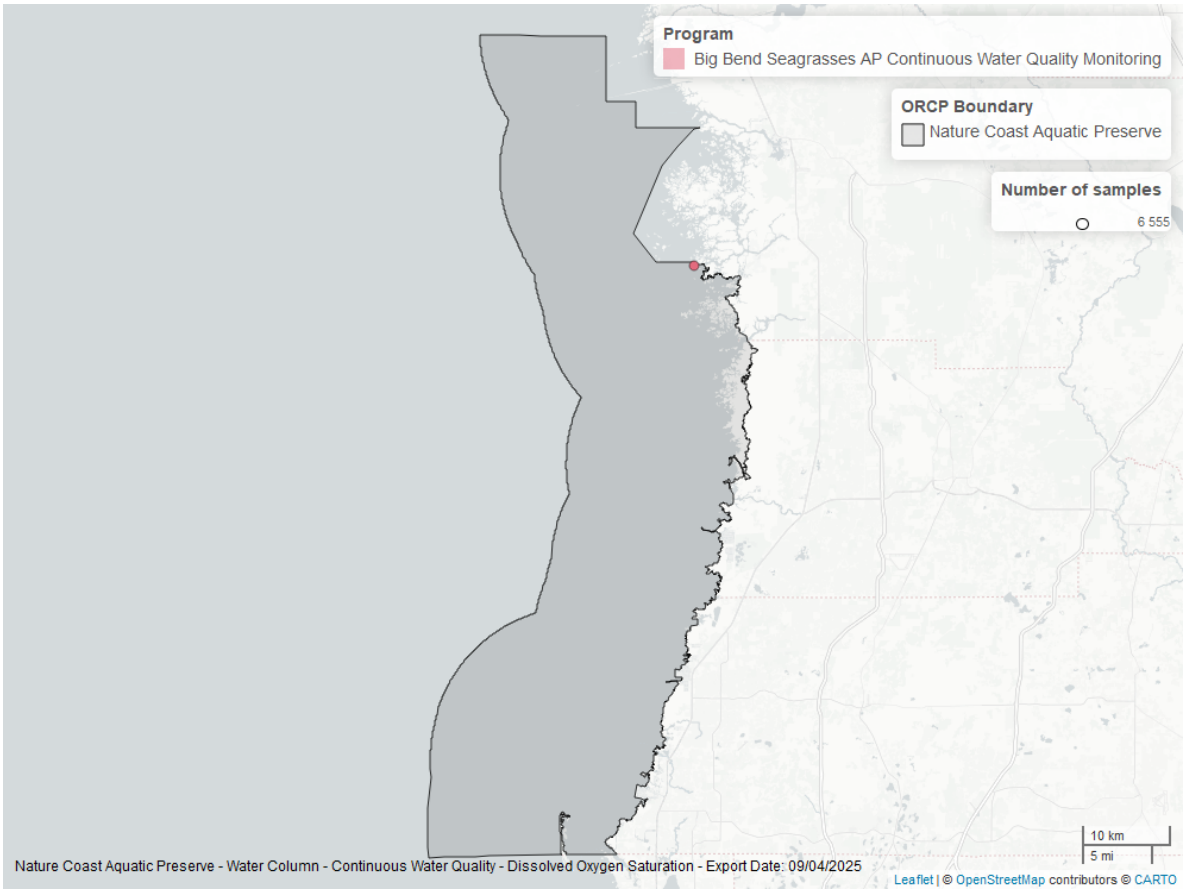

Figure 12: Map showing location of dissolved oxygen saturation continuous water quality sampling locations within the boundaries of *Nature Coast Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Salinity - Discrete

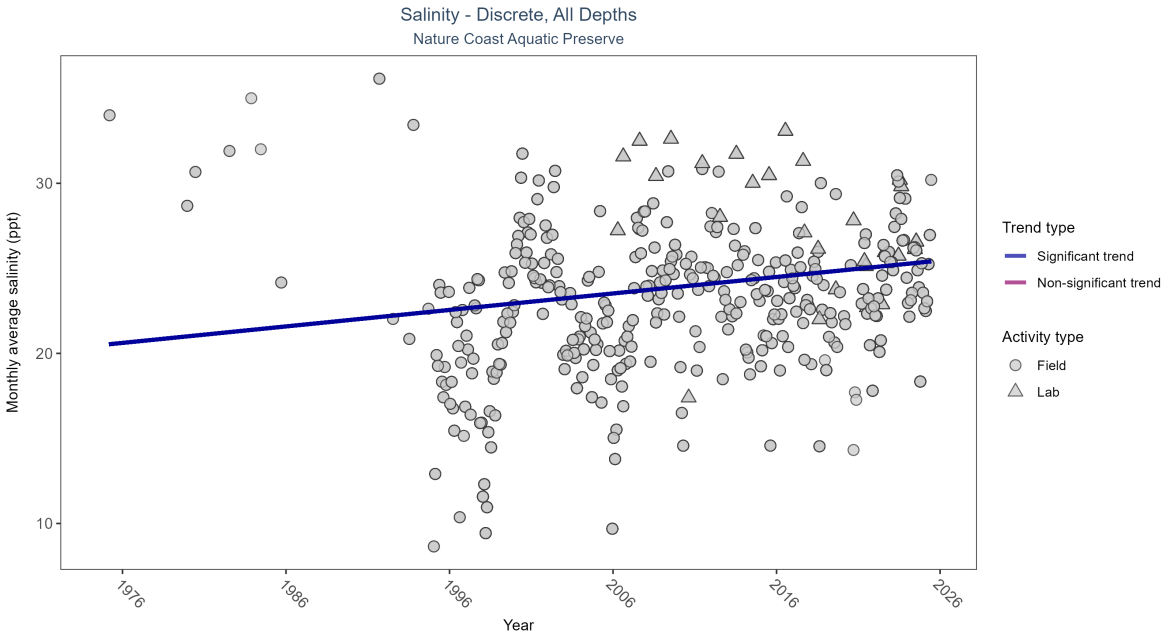

Figure 13: Scatter plot of monthly average salinity over time. If the time series included ten or more years of discrete observations, significant (blue) or non-significant (magenta) trend lines are also shown. Discrete salinity values derived from grab samples analyzed in the field (circles) or the laboratory (triangles) are both included in the plot.

Table 7: Seasonal Kendall-Tau Results for - Salinity

Activity Type	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
All	Significantly increasing trend	11396	42	1975 - 2025	24.2	0.15825	20.51983	0.09688	0

Monthly average salinity increased by 0.1 ppt per year.

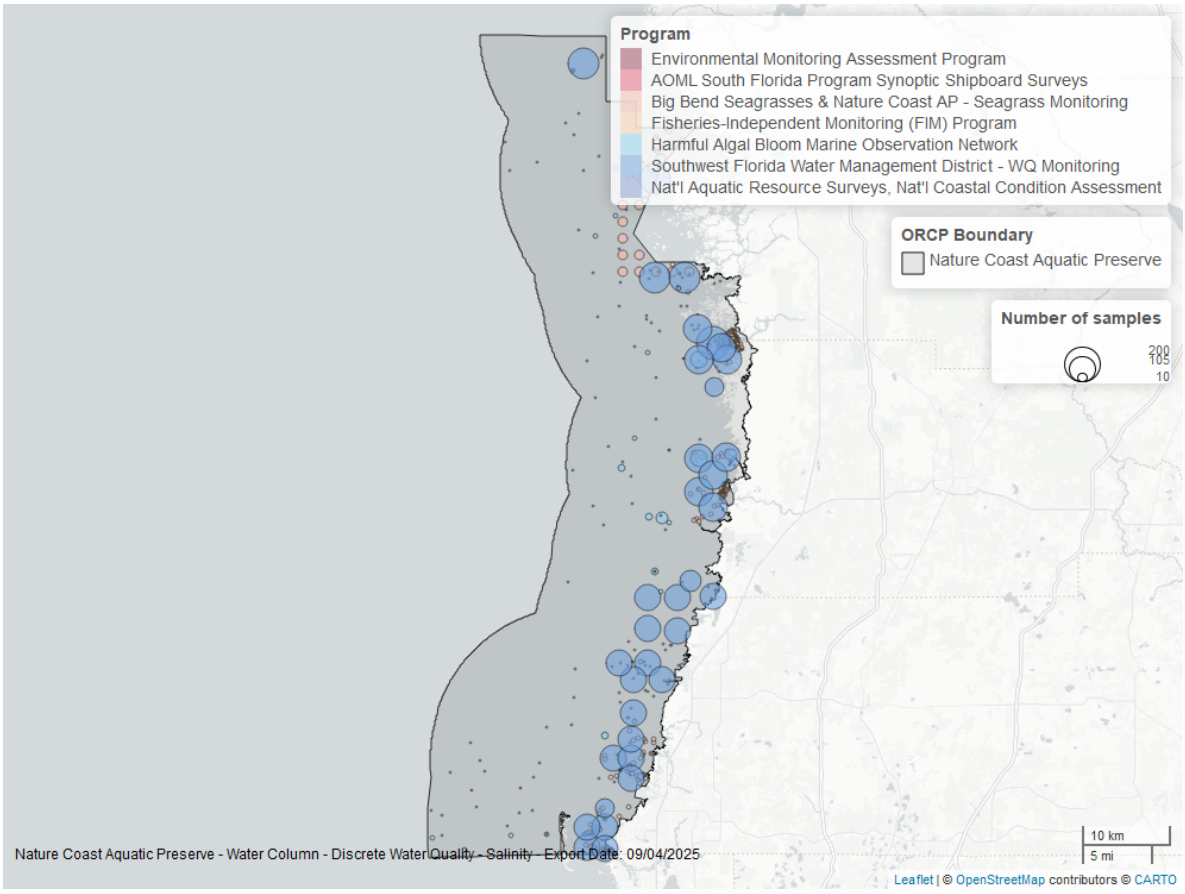

Figure 14: Map showing location of discrete water quality sampling locations within the boundaries of *Nature Coast Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Salinity - Continuous

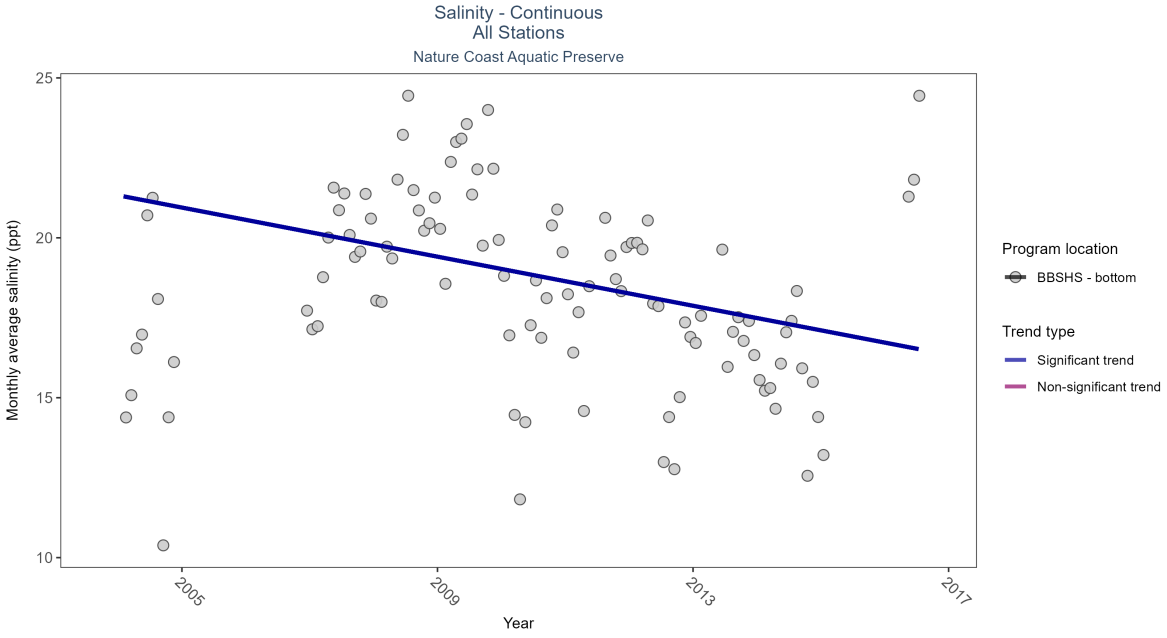

Figure 15: Scatter plot of monthly average salinity over time at continuously monitored program locations. Each location is analyzed separately, with significant (blue) or non-significant (magenta) trend lines shown for time series that included five or more years of observations.

Table 8: Seasonal Kendall-Tau Results - Salinity

Program Location	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
BBSHS	Significantly decreasing trend	235670	12	2004 - 2016	18.4	-0.22	21.33	-0.38	0.005

At one program location, monthly average salinity decreased by 0.38 ppt per year.

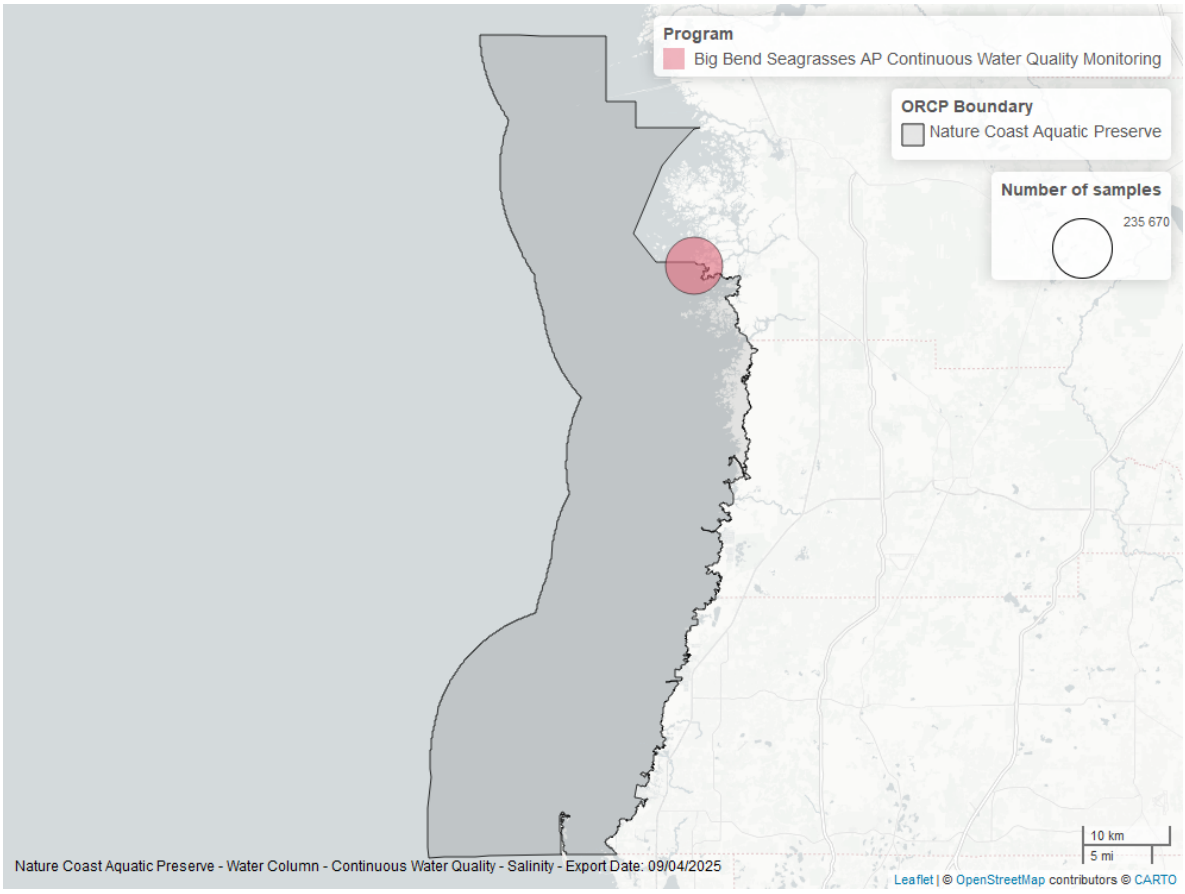

Figure 16: Map showing location of salinity continuous water quality sampling locations within the boundaries of *Nature Coast Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Water Temperature - Discrete

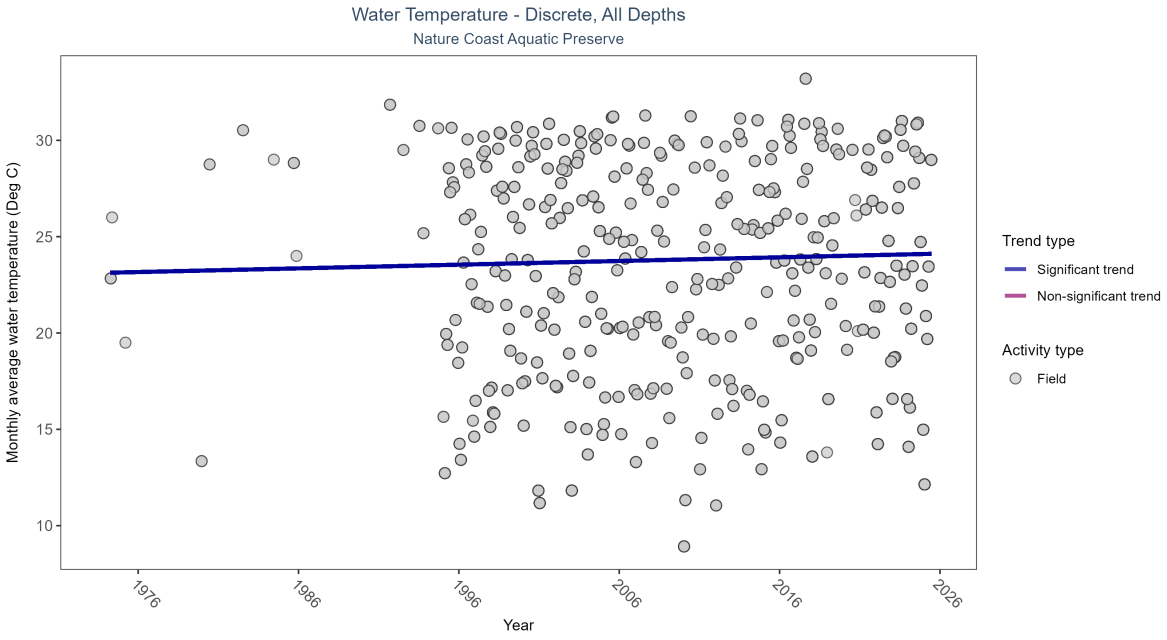

Figure 17: Scatter plot of monthly average water temperature over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only water temperature measurements taken in the field (circles) are included in the plot.

Table 9: Seasonal Kendall-Tau Results for - Water Temperature

Activity Type	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
Field	Significantly increasing trend	9393	42	1974 - 2025	24.2	0.08503	23.12532	0.01912	0.027

Monthly average water temperature increased by 0.02°C per year.

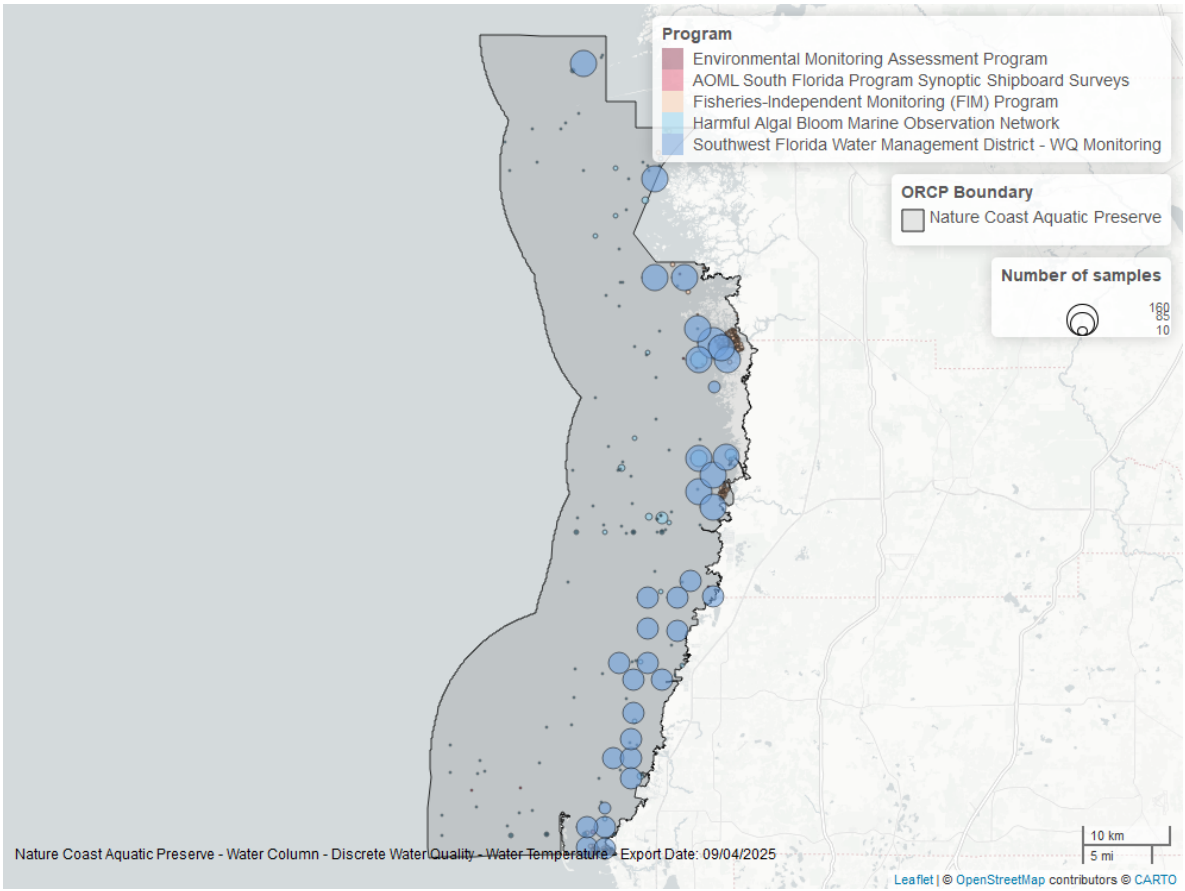

Figure 18: Map showing location of discrete water quality sampling locations within the boundaries of *Nature Coast Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Water Temperature - Continuous

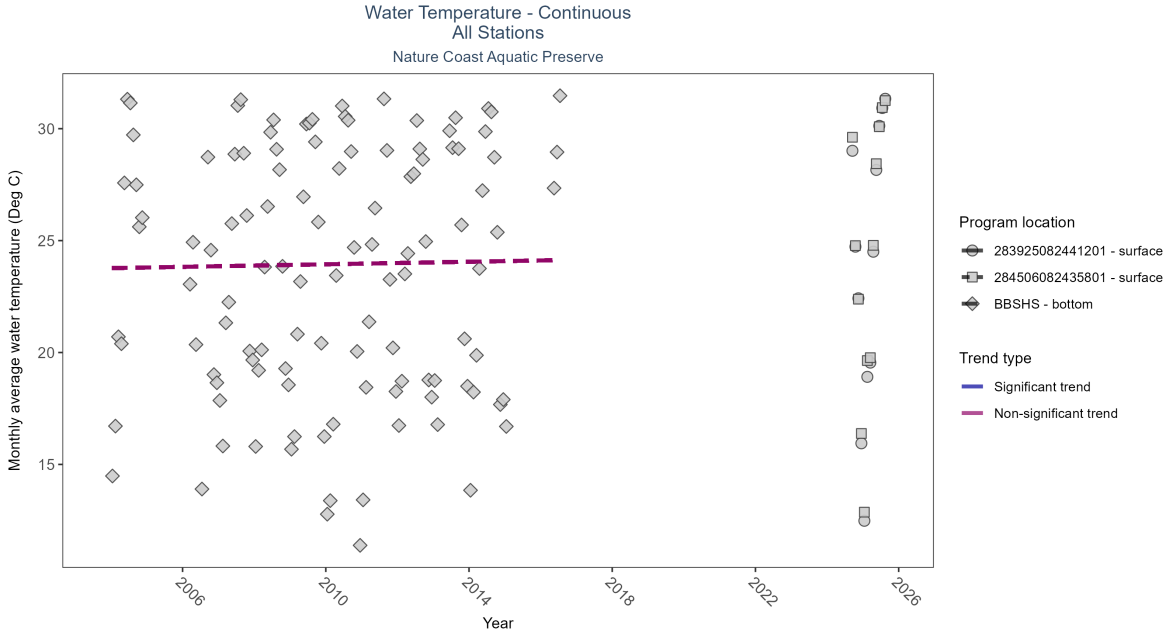

Figure 19: Scatter plot of monthly average water temperature over time at continuously monitored program locations. Each location is analyzed separately, with significant (blue) or non-significant (magenta) trend lines shown for time series that included five or more years of observations.

Table 10: Seasonal Kendall-Tau Results - Water Temperature

Program Location	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
283925082441201	Insufficient data to calculate trend	461	2	2024 - 2025	23.9	-	-	-	-
284506082435801	Insufficient data to calculate trend	480	2	2024 - 2025	24.4	-	-	-	-
BBSHS	No significant trend	244110	12	2004 - 2016	24.5	0.05	23.77	0.03	0.5239

No detectable change in monthly average water temperature was observed at one location. There was insufficient data to fit a model for two locations.

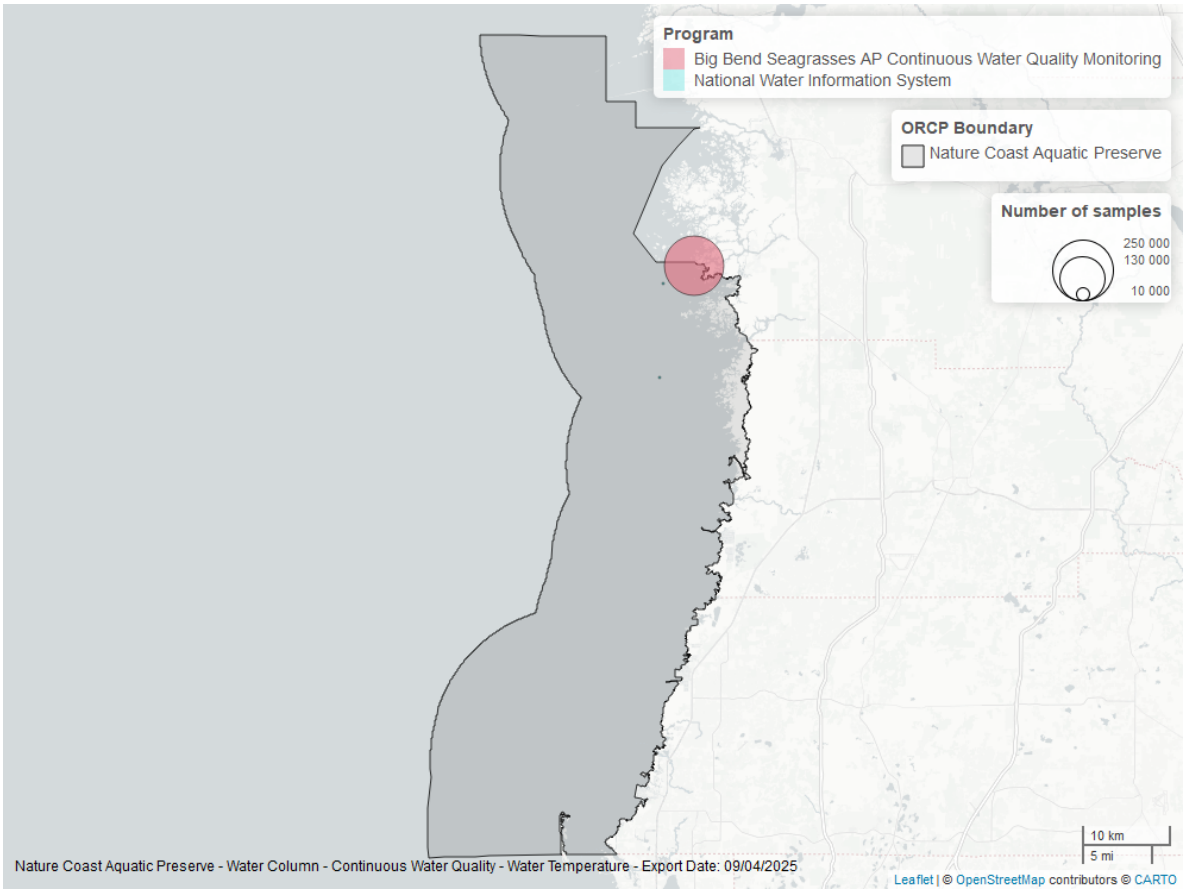

Figure 20: Map showing location of water temperature continuous water quality sampling locations within the boundaries of *Nature Coast Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

pH - Discrete

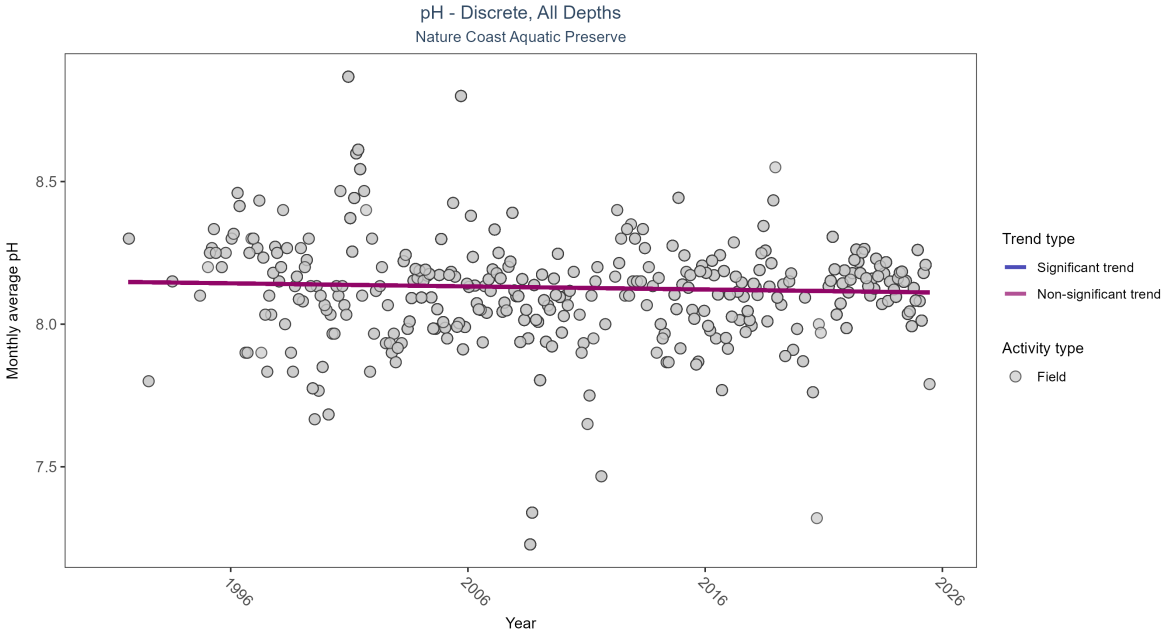

Figure 21: Scatter plot of monthly average pH over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only pH values measured in the field (circles) are included in the plot.

Table 11: Seasonal Kendall-Tau Results for - pH

Activity Type	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
Field	No significant trend	7734	35	1991 - 2025	8.15	-0.04457	8.14862	-0.00108	0.2415

pH showed no detectable trend between 1991 and 2025.

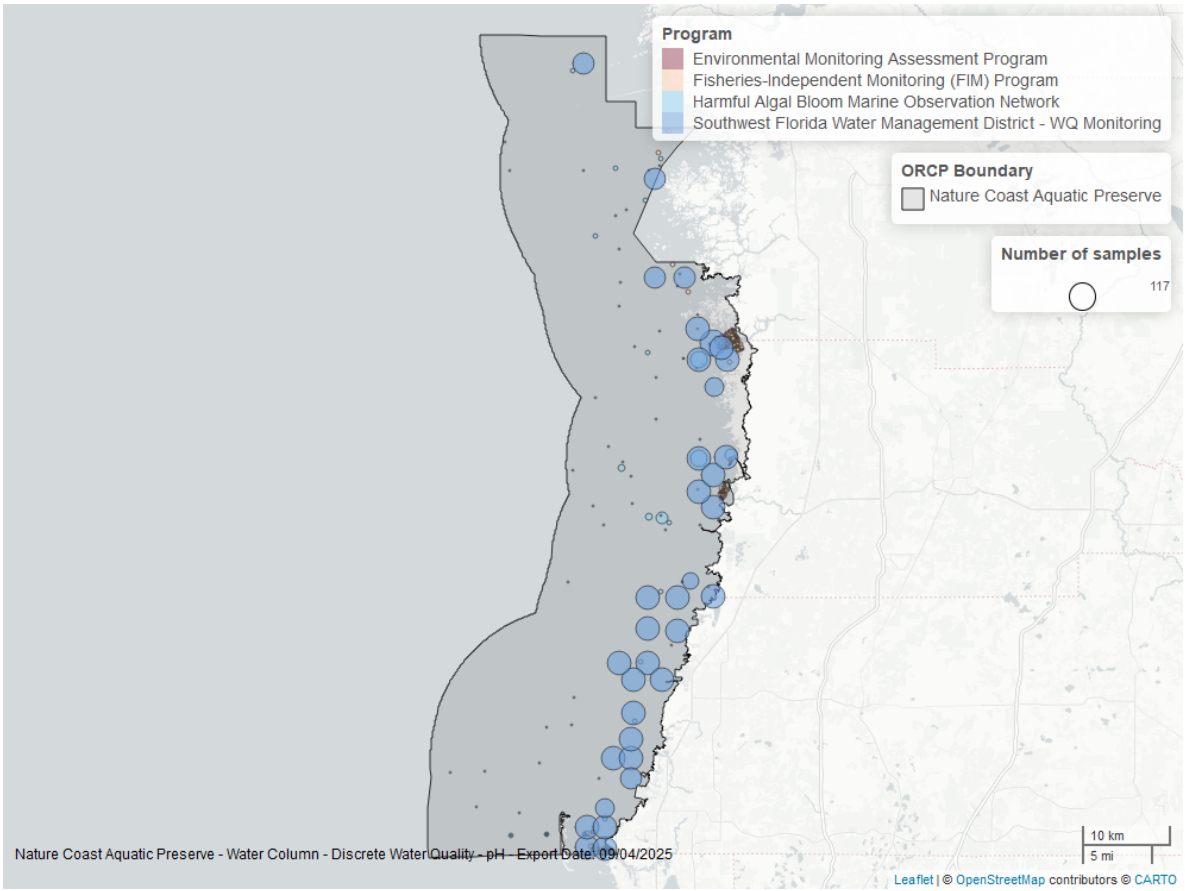

Figure 22: Map showing location of discrete water quality sampling locations within the boundaries of *Nature Coast Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

pH - Continuous

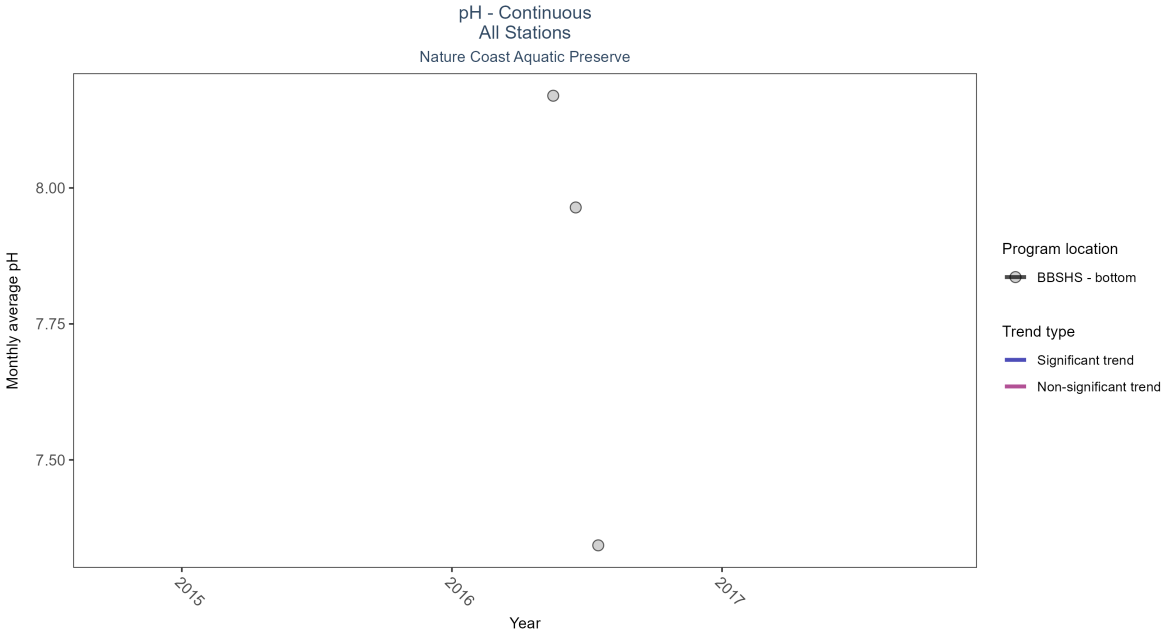

Figure 23: Scatter plot of monthly average pH over time at continuously monitored program locations. Each location is analyzed separately, with significant (blue) or non-significant (magenta) trend lines shown for time series that included five or more years of observations.

Table 12: Seasonal Kendall-Tau Results - pH

Program Location	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
BBSHS	Insufficient data to calculate trend	6555	1	2016 - 2016	8	-	-	-	-

There was insufficient data to fit a model for one location.

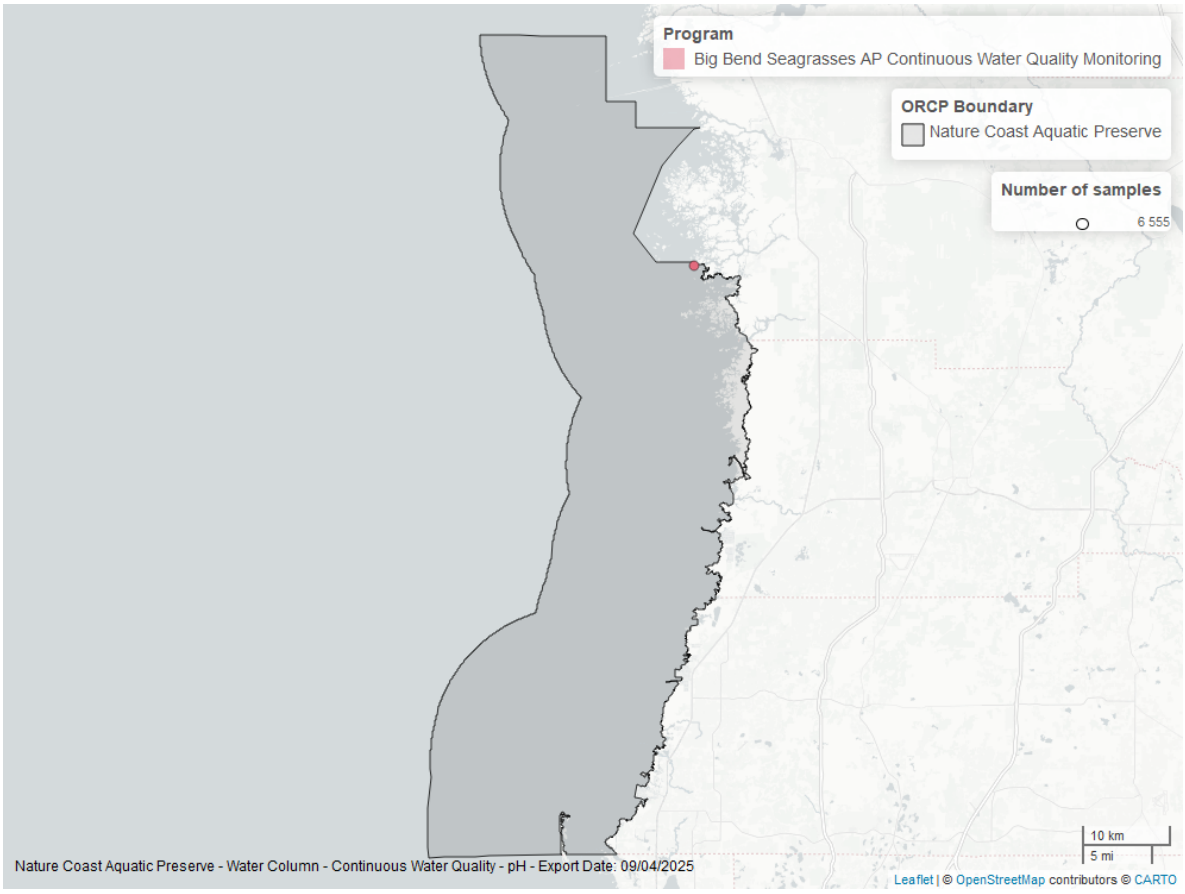

Figure 24: Map showing location of ph continuous water quality sampling locations within the boundaries of *Nature Coast Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Water Clarity

Turbidity - Discrete

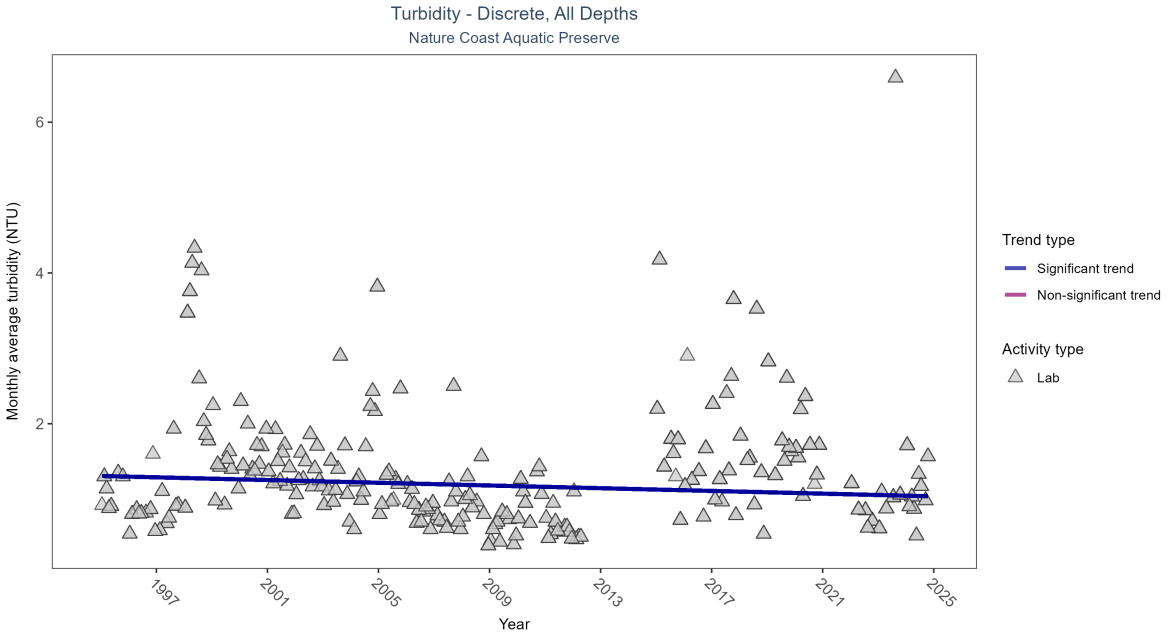

Figure 25: Scatter plot of monthly average turbidity over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only turbidity values measured in the laboratory (triangles) are included in the plot.

Table 13: Seasonal Kendall-Tau Results for - Turbidity

Activity Type	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
Lab	Significantly decreasing trend	2071	27	1995 - 2024	0.97	-0.12809	1.3072	-0.00902	0.0204

Monthly average turbidity decreased by 0.01 NTU per year, indicating an increase in water clarity.

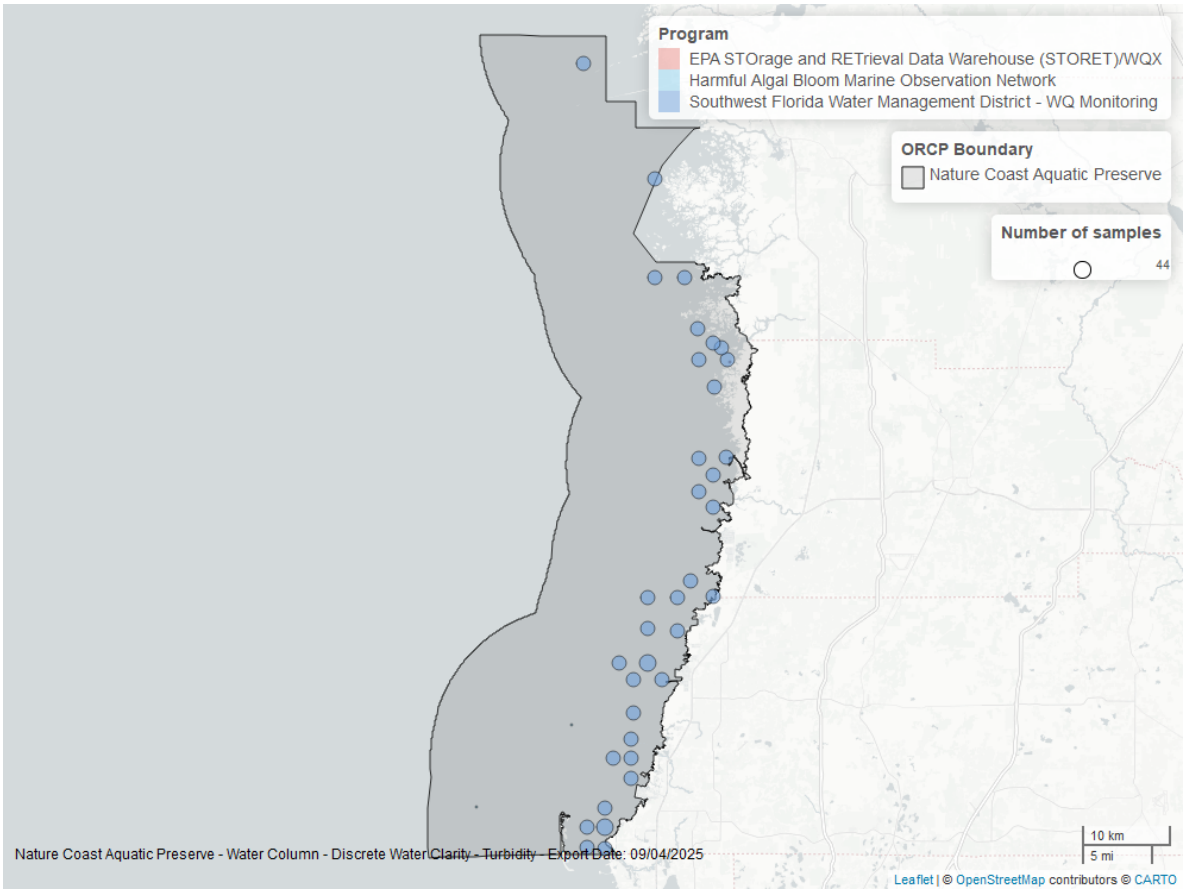

Figure 26: Map showing location of discrete water quality sampling locations within the boundaries of *Nature Coast Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Turbidity - Continuous

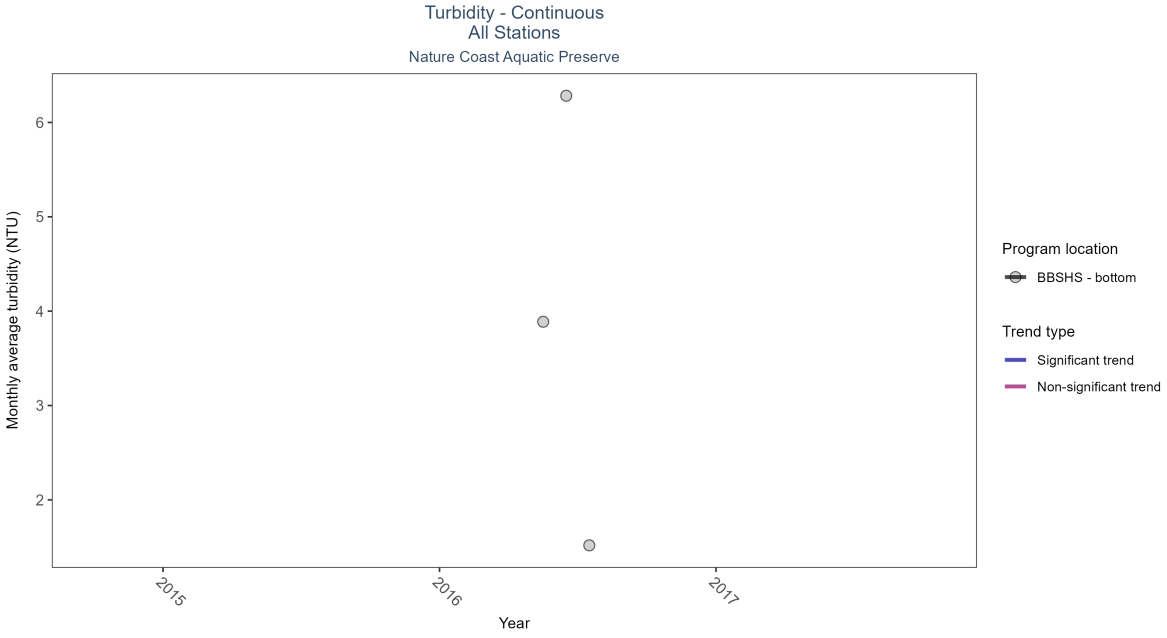

Figure 27: Scatter plot of monthly average turbidity over time at continuously monitored program locations. Each location is analyzed separately, with significant (blue) or non-significant (magenta) trend lines shown for time series that included five or more years of observations.

Table 14: Seasonal Kendall-Tau Results - Turbidity

Program Location	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
BBSHS	Insufficient data to calculate trend	6368	1	2016 - 2016	2	-	-	-	-

There was insufficient data to fit a model for one location.

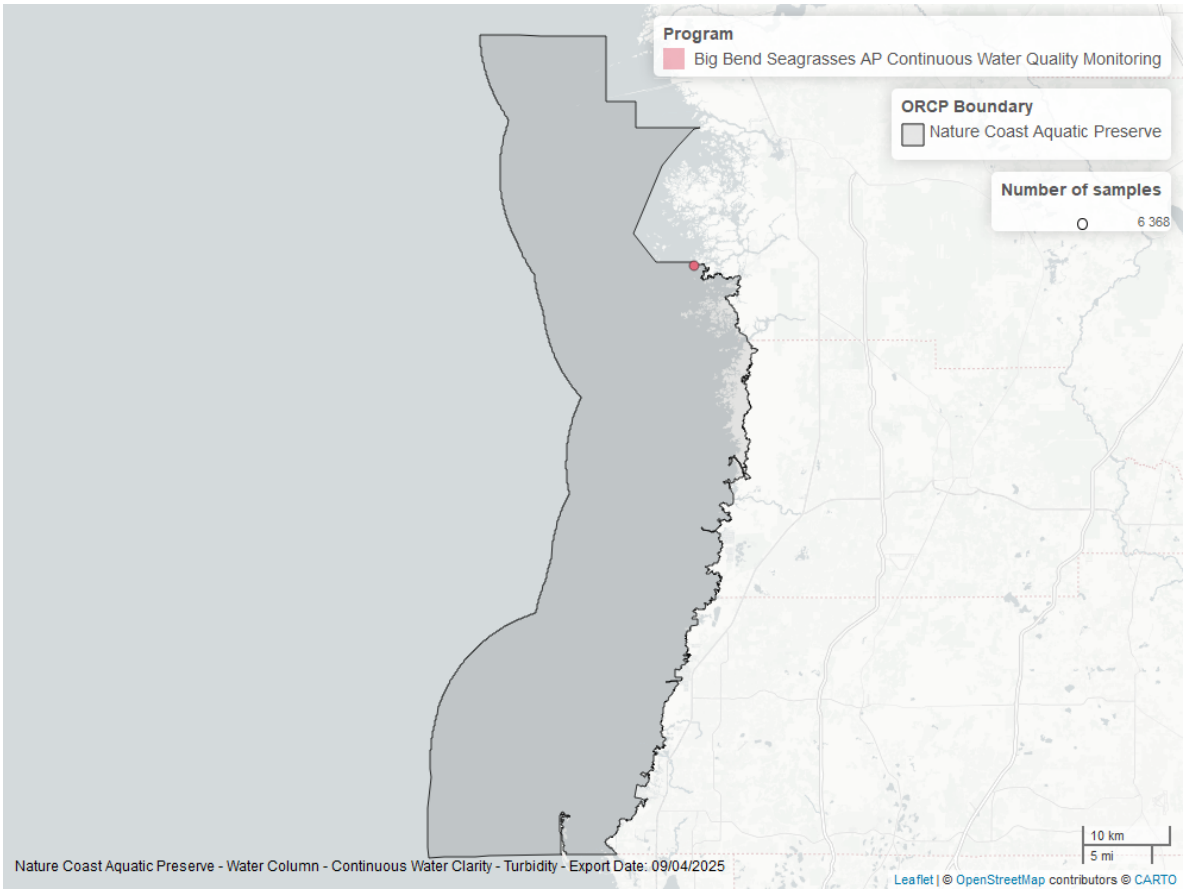

Figure 28: Map showing location of turbidity continuous water quality sampling locations within the boundaries of *Nature Coast Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Total Suspended Solids - Discrete

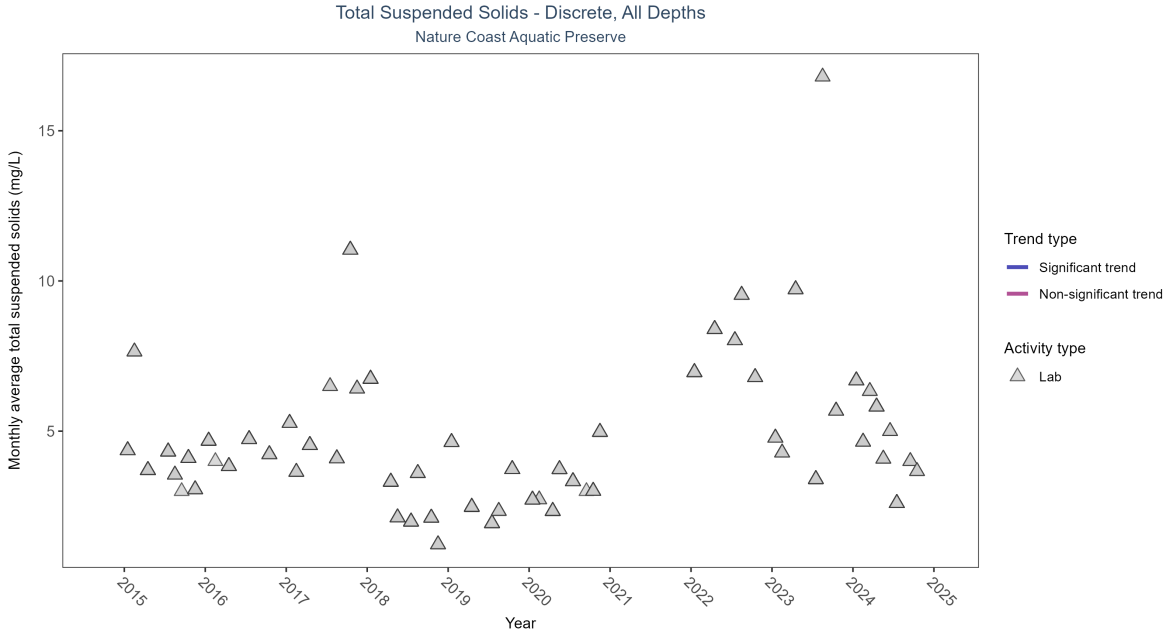

Figure 29: Scatter plot of monthly average total suspended solids (TSS) over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only TSS values obtained from laboratory analyses (triangles) are included in the plot.

Table 15: Seasonal Kendall-Tau Results for - Total Suspended Solids

Activity Type	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
Lab	Insufficient data to calculate trend	1315	9	2015 - 2024	3.56	-	-	-	-

There was insufficient data to fit a model for total suspended solids.

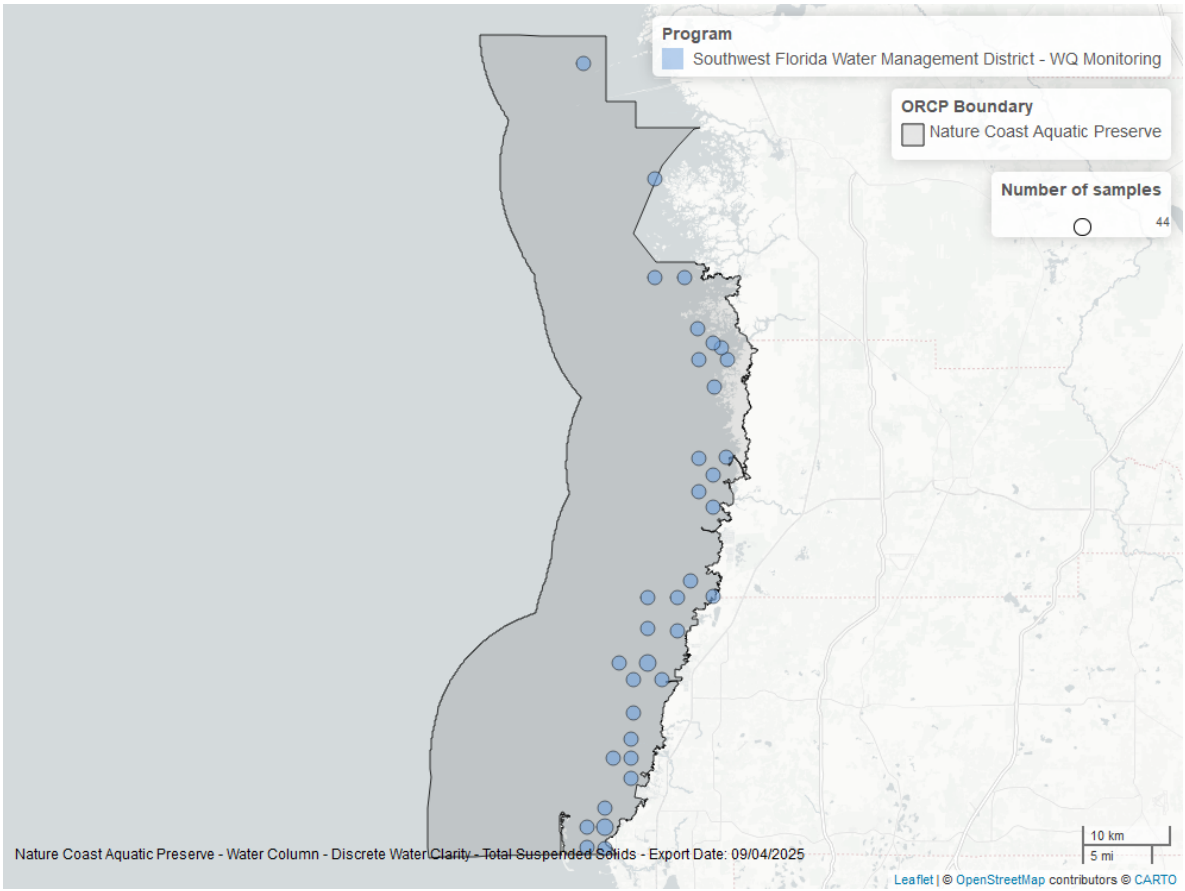

Figure 30: Map showing location of discrete water quality sampling locations within the boundaries of *Nature Coast Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Chlorophyll a, Uncorrected for Pheophytin - Discrete

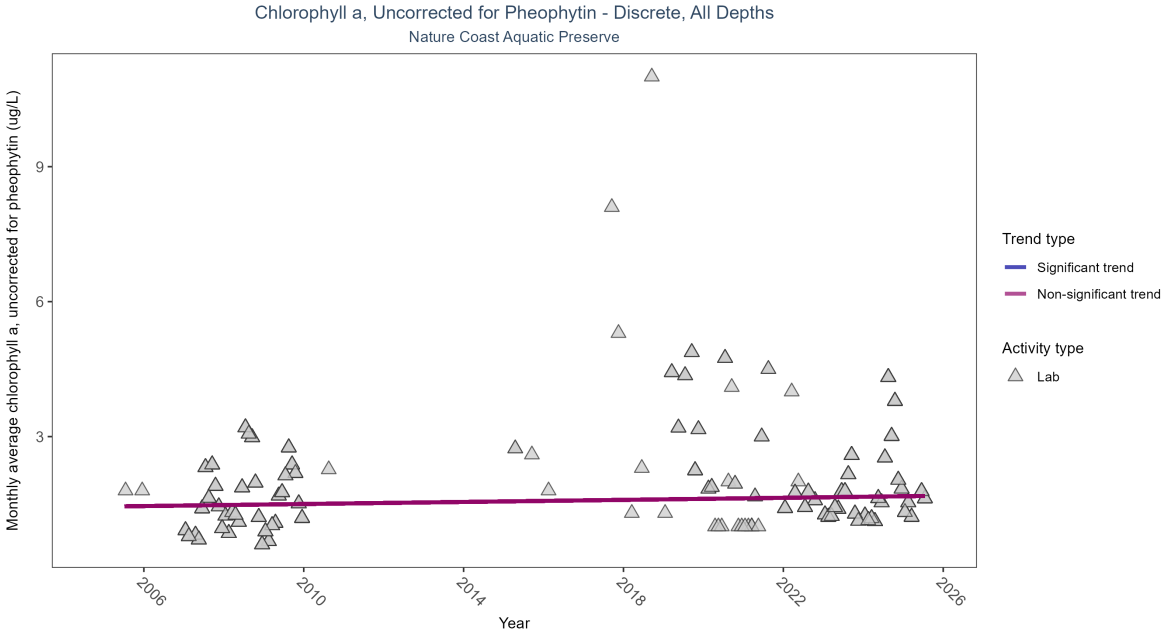

Figure 31: Scatter plot of monthly average levels of chlorophyll a, uncorrected for pheophytin, over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only laboratory-analyzed chlorophyll a (triangles) is included in the plot.

Table 16: Seasonal Kendall-Tau Results for - Chlorophyll a, Uncorrected for Pheophytin

Activity Type	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
Lab	No significant trend	3188	16	2005 - 2025	1	0.11599	1.44382	0.01149	0.1892

Chlorophyll a, uncorrected for pheophytin, showed no detectable trend between 2005 and 2025.

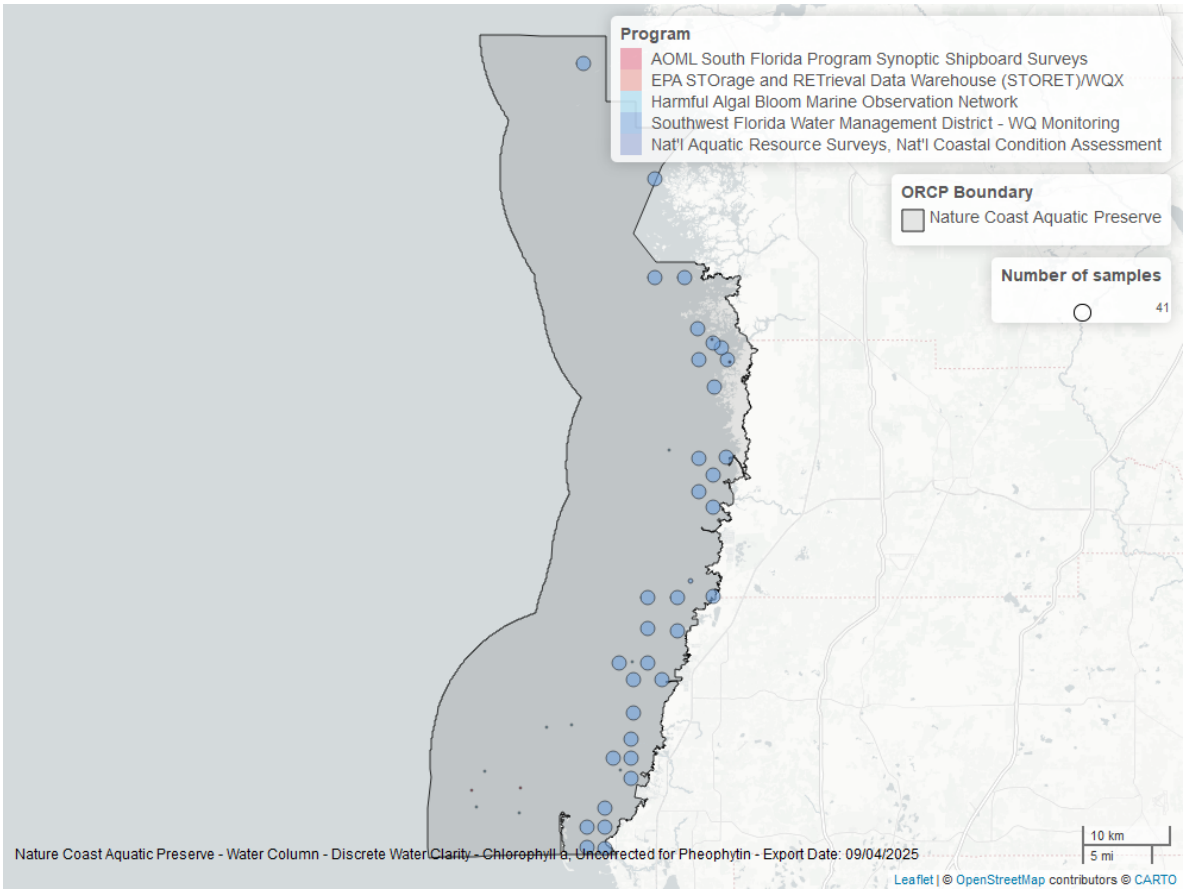

Figure 32: Map showing location of discrete water quality sampling locations within the boundaries of *Nature Coast Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Chlorophyll a, Corrected for Pheophytin - Discrete

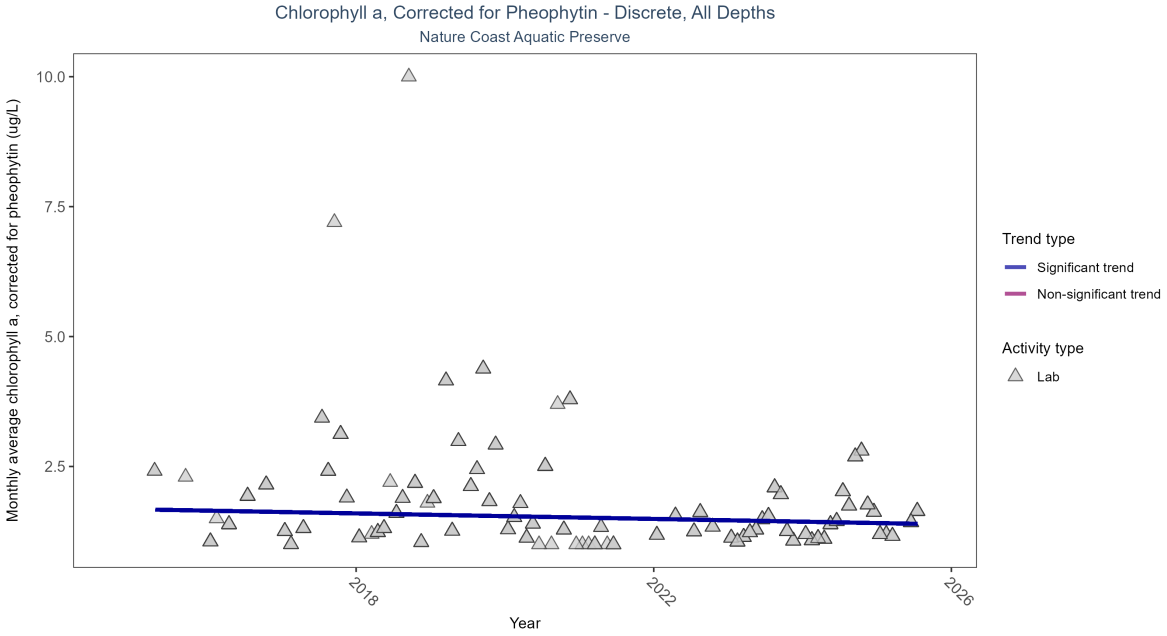

Figure 33: Scatter plot of monthly average levels of chlorophyll a, corrected for pheophytin, over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only laboratory-analyzed chlorophyll a (triangles) is included in the plot.

Table 17: Seasonal Kendall-Tau Results for - Chlorophyll a, Corrected for Pheophytin

Activity Type	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
Lab	Significantly decreasing trend	2805	11	2015 - 2025	1	-0.20299	1.67688	-0.02656	0.0253

Monthly average chlorophyll a, corrected for pheophytin, decreased by 0.03 µg/L per year, indicating an increase in water clarity.

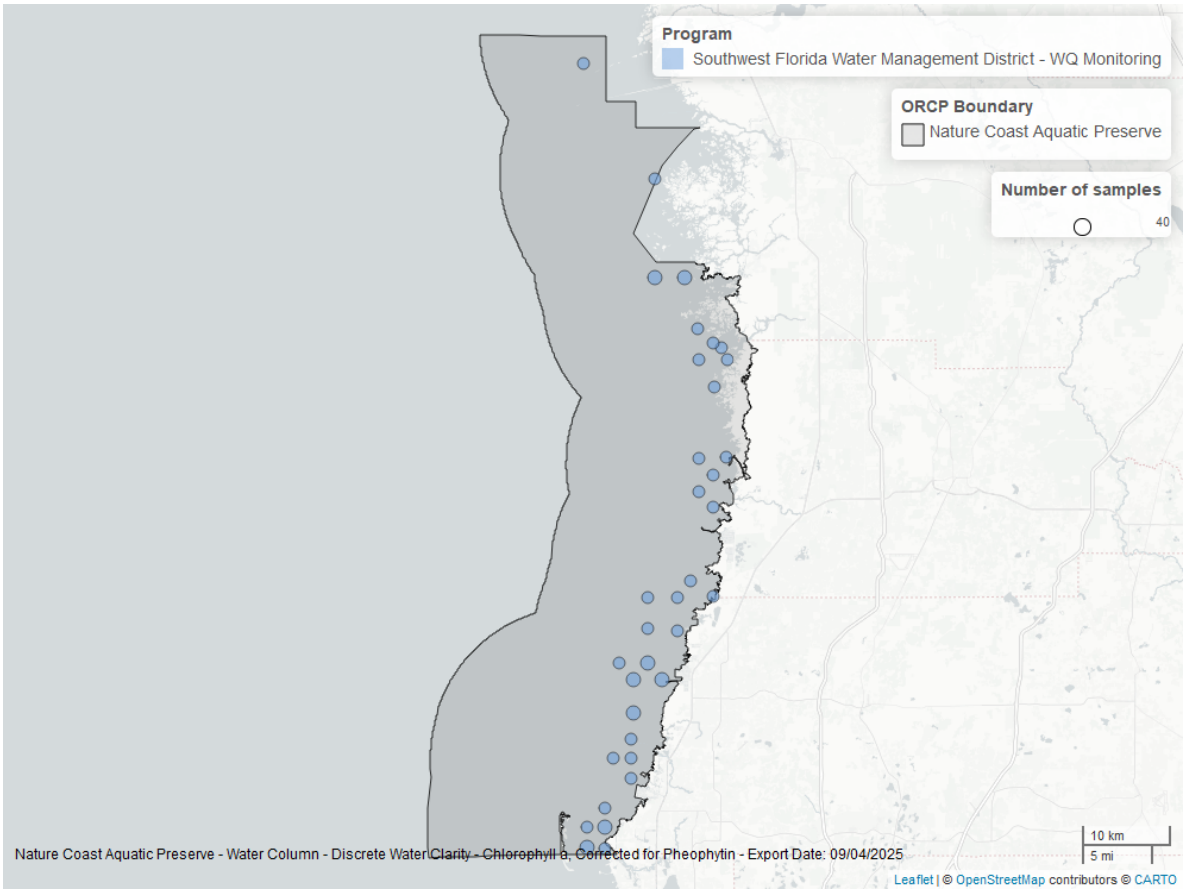

Figure 34: Map showing location of discrete water quality sampling locations within the boundaries of *Nature Coast Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Secchi Depth - Discrete

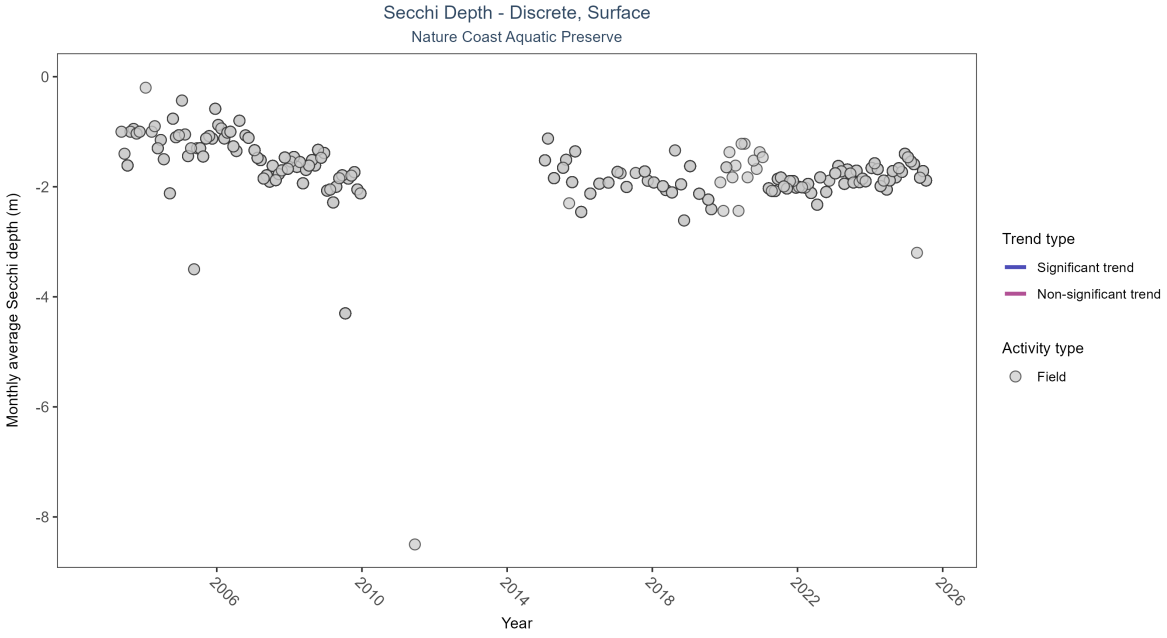

Figure 35: Scatter plot of monthly average Secchi depth over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Secchi depth is only measured in the field (circles).

Table 18: Seasonal Kendall-Tau Results for - Secchi Depth

Activity Type	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
Field	Significantly decreasing trend	5226	23	1991 - 2025	-1.595	-0.31957	-1.06511	-0.01986	0

Monthly average Secchi depth became deeper by 0.02 m per year, indicating an increase in water clarity.

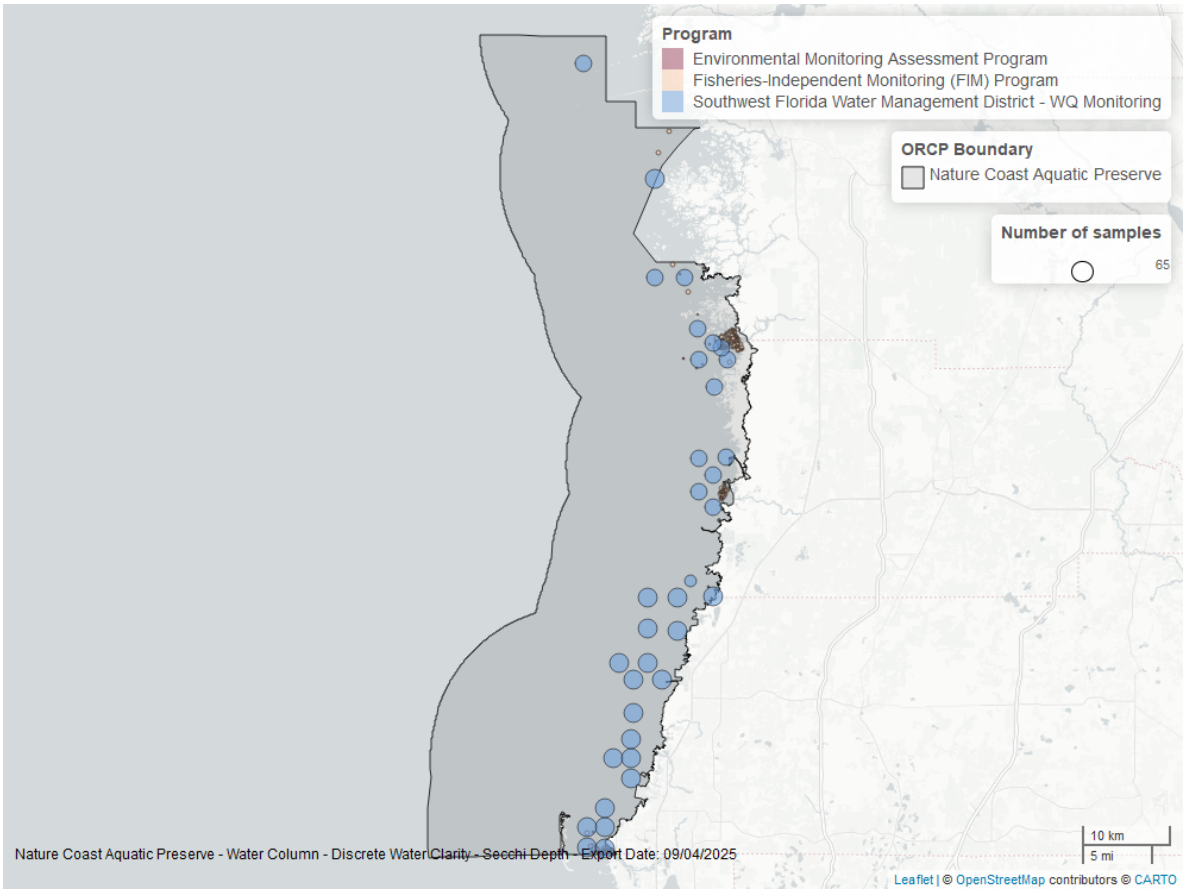

Figure 36: Map showing location of discrete water quality sampling locations within the boundaries of *Nature Coast Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.

Colored Dissolved Organic Matter - Discrete

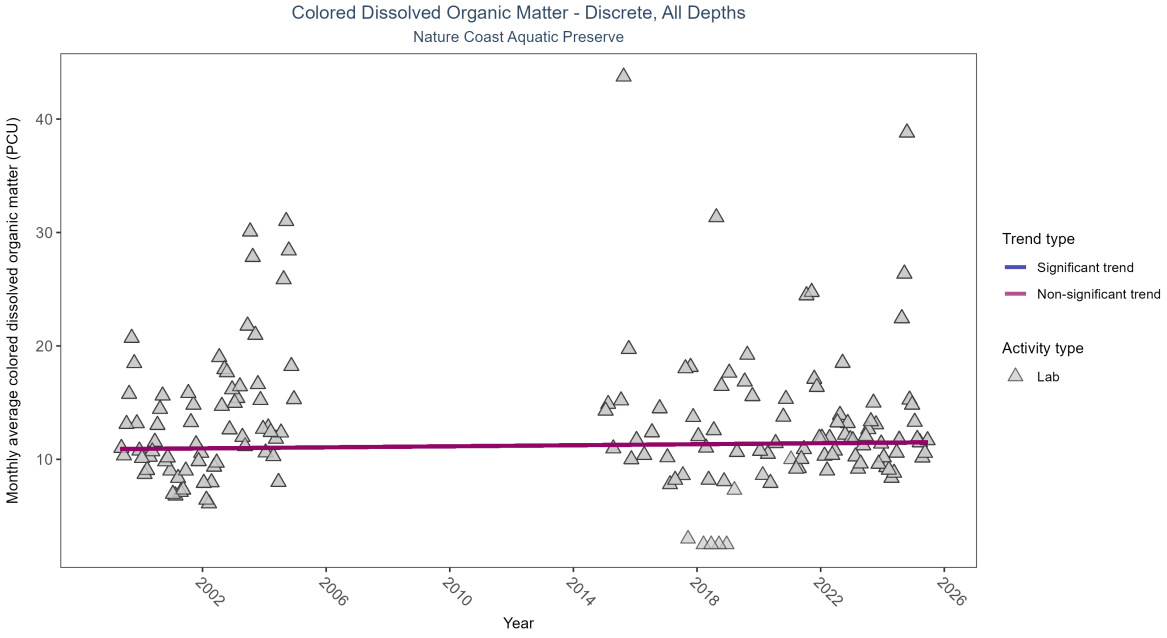

Figure 37: Scatter plot of monthly average colored dissolved organic matter (CDOM) over time. If the time series included ten or more years of discrete observations, a significant (blue) or non-significant (magenta) trend line is also shown. Only laboratory-analyzed CDOM (triangles) is included in the plot.

Table 19: Seasonal Kendall-Tau Results for - Colored Dissolved Organic Matter

Activity Type	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
Lab	No significant trend	6450	17	1999 - 2025	10.426	0.07281	10.89881	0.02293	0.2809

Colored dissolved organic matter showed no detectable trend between 1999 and 2025.

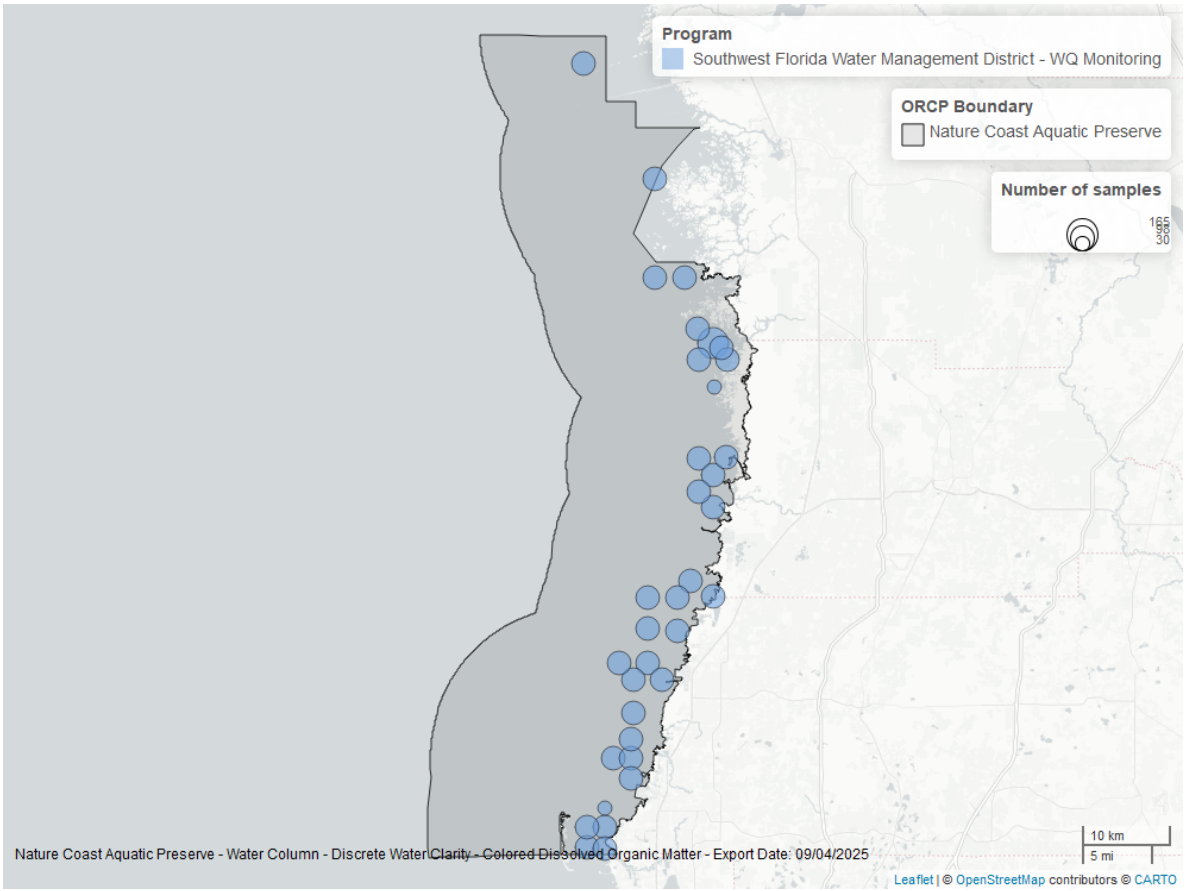

Figure 38: Map showing location of discrete water quality sampling locations within the boundaries of *Nature Coast Aquatic Preserve*. The bubble size on the maps above reflect the amount of data available at each sampling site.