# Biscayne Bay-Cape Florida to Monroe County Line Aquatic Preserve

SEACAR Habitat Analyses

Last compiled on 03 September, 2024

## Contents

## Threshold Filtering

Threshold filters, following the guidance of Florida Department of Environmental Protection's (*FDEP*) Division of Environmental Assessment and Restoration (*DEAR*) are used to exclude specific results values from the SEACAR Analysis. Based on the threshold filters, Quality Assurance / Quality Control (*QAQC*) Flags are inserted into the *SEACAR_QAQCFlagCode* and *SEACAR_QAQC_Description* columns of the export data. The *Include* column indicates whether the *QAQC* Flag will also indicate that data are excluded from analysis. No data are excluded from the data export, but the analysis scripts can use the *Include* column to exclude data (1 to include, 0 to exclude).

Table 1: Continuous Water Quality threshold values

| *Parameter Name* | *Units* | *Low Threshold* | *High Threshold* | *Sensor Type* |
|---|---|---|---|---|
| Dissolved Oxygen | mg/L | 0 | 50 | YSI EXOs |
| Dissolved Oxygen | mg/L | 0 | 50 | Analysis Only - 2022-04-04 |
| Dissolved Oxygen | mg/L | 0 | 50 | 6600 Series |
| Salinity | ppt | 0 | 70 | 6600 Series |
| Salinity | ppt | 0 | 70 | YSI EXOs |
| Salinity | ppt | 0 | 70 | Analysis Only - 2022-04-04 |
| Water Temperature | Degrees C | -5 | 45 | YSI EXOs |
| Water Temperature | Degrees C | -5 | 45 | Analysis Only - 2022-04-04 |
| Water Temperature | Degrees C | -5 | 45 | 6600 Series |
| pH | pH | 2 | 14 | Analysis Only - 2022-04-04 |
| pH | pH | 2 | 14 | 6600 Series |
| pH | pH | 2 | 14 | YSI EXOs |
| Dissolved Oxygen Saturation | % | 0 | 500 | YSI EXOs |
| Dissolved Oxygen Saturation | % | 0 | 500 | 6600 Series |
| Dissolved Oxygen Saturation | % | 0 | 500 | Analysis Only - 2022-04-04 |
| Specific Conductivity | mS/cm | 0 | 100 | 6600 Series |
| Specific Conductivity | mS/cm | 0 | 200 | YSI EXOs |
| Turbidity | NTU | 0 | 4000 | YSI EXOs |
| Turbidity | NTU | 0 | 1000 | 6600 Series |
| Turbidity | NTU | 0 | 4000 | Analysis Only - 2022-04-04 |

Table 2: Discrete Water Quality threshold values

| *Parameter Name* | *Units* | *Low Threshold* | *High Threshold* |
|---|---|---|---|
| Dissolved Oxygen | mg/L | 0.000001 | 22 |
| Salinity | ppt | 0 | 70 |
| Water Temperature | Degrees C | 3 | 40 |
| pH | | 2 | 13 |
| Dissolved Oxygen Saturation | % | 0.000001 | 310 |
| Specific Conductivity | mS/cm | 0.005000001 | 100 |
| Turbidity | NTU | 0 | - |
| Total Suspended Solids (TSS) | mg/L | 0 | - |
| Chlorophyll a uncorrected for pheophytin | ug/L | 0 | - |
| Chlorophyll a corrected for pheophytin | ug/L | 0 | - |
| Secchi Depth | m | 0.000001 | 50 |
| Light Extinction Coefficient | m^1 | 0 | - |
| Colored dissolved organic matter, CDOM | PCU | 0 | - |
| Fluorescent dissolved organic matter, FDOM | QSE | 0 | - |
| Total Nitrogen | mg/L | 0 | - |
| Total Kjeldahl Nitrogen TKN | mg/L | 0 | - |
| NO2+3 Filtered | mg/L | 0 | - |
| NH4 Filtered | mg/L | 0 | - |
| Total Phosphorus | mg/L | 0 | - |

| *Parameter Name* | *Units* | *Low Threshold* | *High Threshold* |
|---|---|---|---|
| PO4 Filtered | mg/L | 0 | - |
| Ammonia- Un-ionized (NH3) | mg/L | 0 | - |
| Nitrate (N) | mg/L | 0 | - |
| Nitrite (N) | mg/L | 0 | - |
| Nitrogen, organic | mg/L | 0 | - |

Table 3: Quality Assurance Flags inserted based on threshold checks listed in Table 1 & 2

| *SEACAR QAQC Description* | *Include* | *SEACAR QAQCFlagCode* |
|---|---|---|
| Exceeds Maximum threshold. Not verified in raw data | No | 2Q |
| Exceeds Maximum threshold. Verified in raw data | No | 3Q |
| Below Minimum threshold. Not verified in raw data | No | 4Q |
| Below Minimum threshold. Verified in raw data | No | 5Q |
| Within threshold tolerance | Yes | 6Q |
| No defined thresholds for this parameter | Yes | 7Q |

# Value Qualifiers

Value qualifier codes included within the data are used to exclude certain results from the analysis. The data are retained in the data export files, but the analysis uses the *Include* column to filter the results.

**STORET and WIN value qualifier codes**

Value qualifier codes from *STORET* and *WIN* data are examined with the database and used to populate the *Include* column in data exports.

Table 4: Value Qualifier codes excluded from analysis

| *Qualifier Source* | *Value Qualifier* | *Include* | *MDL* | *Description* |
|---|---|---|---|---|
| STORET-WIN | H | No | 0 | Value based on field kit determination; results may not be accurate |
| STORET-WIN | J | No | 0 | Estimated value |
| STORET-WIN | V | No | 0 | Analyte was detected at or above method detection limit |
| STORET-WIN | Y | No | 0 | Lab analysis from an improperly preserved sample; data may be inaccurate |

**Discrete Water Quality Value Qualifiers**

The following value qualifiers are highlighted in the Discrete Water Quality section of this report. An exception is made for **Program 476** - *Charlotte Harbor Estuaries Volunteer Water Quality Monitoring Network* and data flagged with Value Qualifier **H** are included for this program only.

**H** - Value based on field kit determiniation; results may not be accurate. This code shall be used if a field screening test (e.g., field gas chromatograph data, immunoassay, or vendor-supplied field kit) was used to generate the value and the field kit or method has not been recognized by the Department as equivalent to laboratory methods.

**I** - The reported value is greater than or equal to the laboratory method detection limit but less than the laboratory practical quantitation limit.

**Q** - Sample held beyond the accepted holding time. This code shall be used if the value is derived from a sample that was prepared or analyzed after the approved holding time restrictions for sample preparation or analysis.

**S** - Secchi disk visible to bottom of waterbody. The value reported is the depth of the waterbody at the location of the Secchi disk measurement.

**U** - Indicates that the compound was analyzed for but not detected. This symbol shall be used to indicate that the specified component was not detected. The value associated with the qualifier shall be the laboratory method detection limit. Unless requested by the client, less than the method detection limit values shall not be reported

**Systemwide Monitoring Program (SWMP) value qualifier codes**

Value qualifier codes from the *SWMP* continuous program are examined with the database and used to populate the *Include* column in data exports. *SWMP* Qualifier Codes are indicated by *QualifierSource=SWMP*.

Table 5: SWMP Value Qualifier codes

| *Qualifier Source* | *Value Qualifier* | *Include* | *Description* |
|---|---|---|---|
| SWMP | -1 | Yes | Optional parameter not collected |
| SWMP | -2 | No | Missing data |
| SWMP | -3 | No | Data rejected due to QA/QC |
| SWMP | -4 | No | Outside low sensor range |
| SWMP | -5 | No | Outside high sensor range |
| SWMP | 0 | Yes | Passed initial QA/QC checks |
| SWMP | 1 | No | Suspect data |
| SWMP | 2 | Yes | Reserved for future use |
| SWMP | 3 | Yes | Calculated data: non-vented depth/level sensor correction for changes in barometric pressure |
| SWMP | 4 | Yes | Historical: Pre-auto QA/QC |
| SWMP | 5 | Yes | Corrected data |

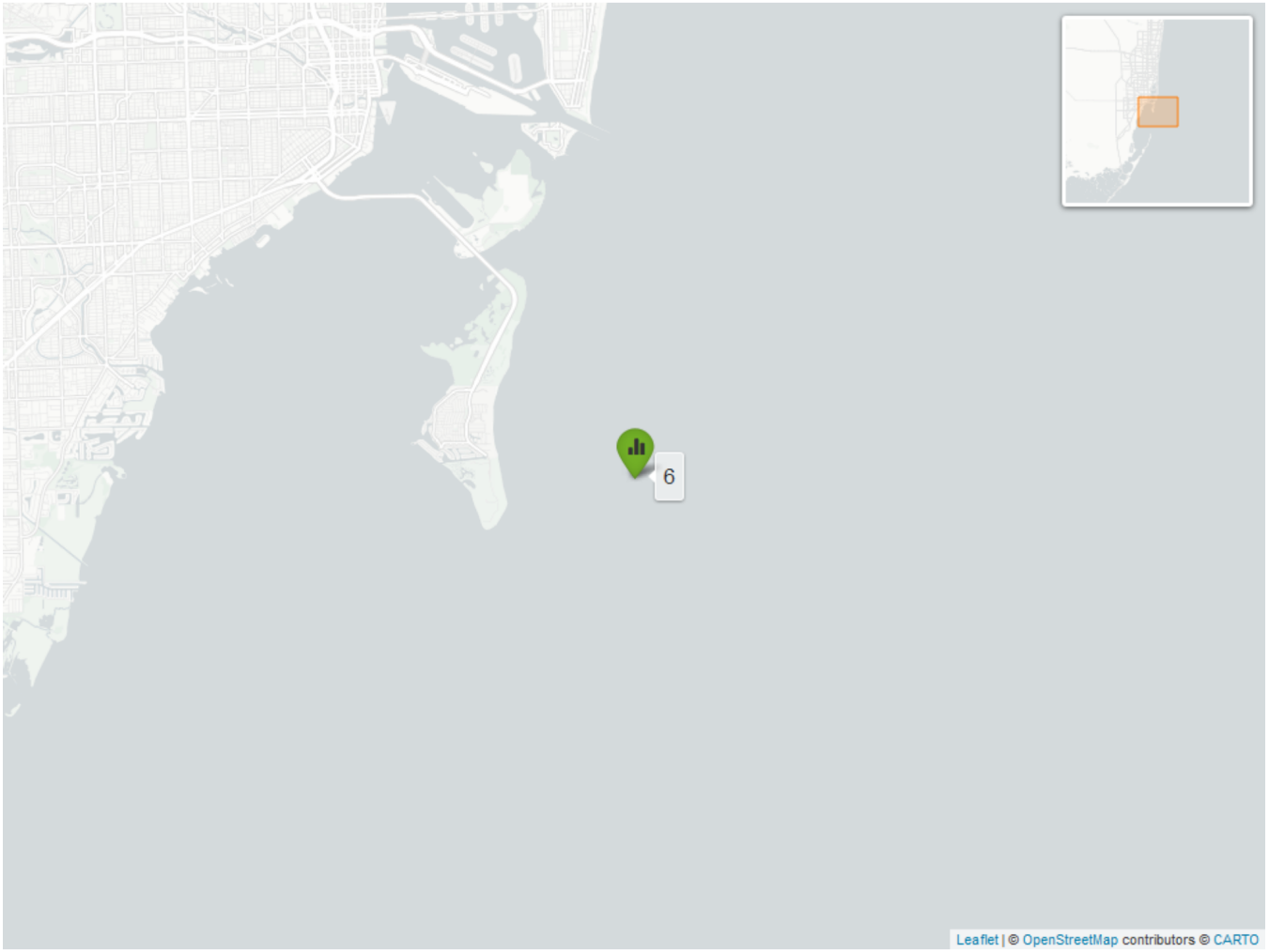
## Water Quality - Continuous

The following files were used in the continuous analysis:

- *Combined_WQ_WC_NUT_cont_Dissolved_Oxygen_SE-2024-Jul-02.txt*
- *Combined_WQ_WC_NUT_cont_Dissolved_Oxygen_Saturation_SE-2024-Jul-02.txt*
- *Combined_WQ_WC_NUT_cont_pH_SE-2024-Jul-02.txt*
- *Combined_WQ_WC_NUT_cont_Salinity_SE-2024-Jul-02.txt*
- *Combined_WQ_WC_NUT_cont_Turbidity_SE-2024-Jul-02.txt*
- *Combined_WQ_WC_NUT_cont_Water_Temperature_SE-2024-Jul-02.txt*

Table 6: Water Temperature on Coral Reefs in the Florida Keys (986)

| *ProgramLocationID* | *Years of Data* | *Use in Analysis* | *Parameters* |
|---|---|---|---|
| 6 | 10 | TRUE | TempW |

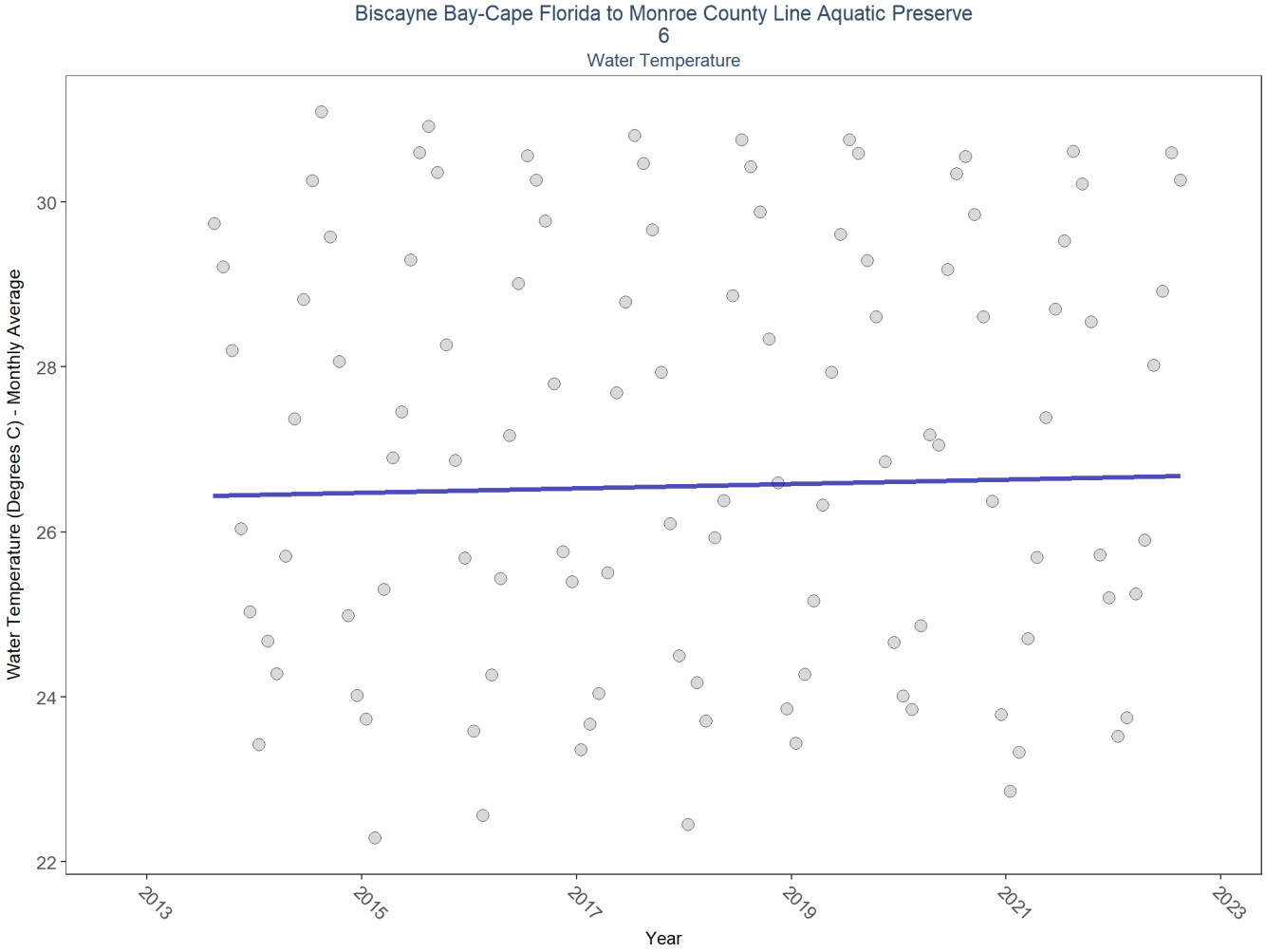



Map showing Continuous Water Quality Monitoring sampling locations within the boundaries of Biscayne Bay-Cape Florida to Monroe County Line Aquatic Preserve. Sites marked as *Use In Analysis* are featured in this report.

## Water Temperature - Continuous Water Quality

### 6

Water Temperature on Coral Reefs in the Florida Keys (986)



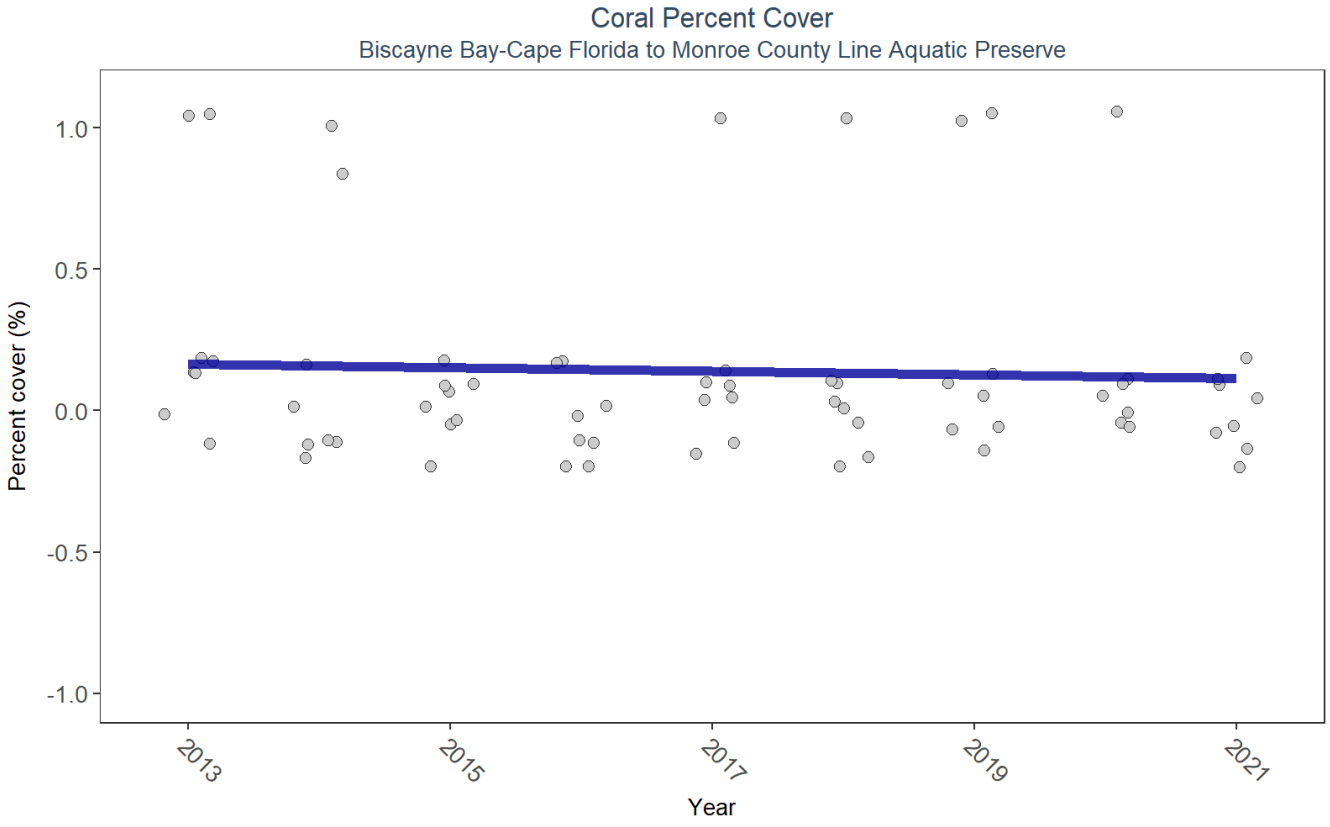

| RelativeDepth | N_Data | N_Years | Median | Independent | tau | p | SennSlope | SennIntercept | ChiSquared | pChiSquared | Trend |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Surface | 63582 | 10 | 26.77 | TRUE | 0.0892 | 0.2598 | 0.02716864 | 26.42151 | 6.162 | 0.8623 | 0 |

*p < 0.00005 appear as 0 due to rounding.*

*SennIntercept is intercept value at beginning of record for monitoring location*

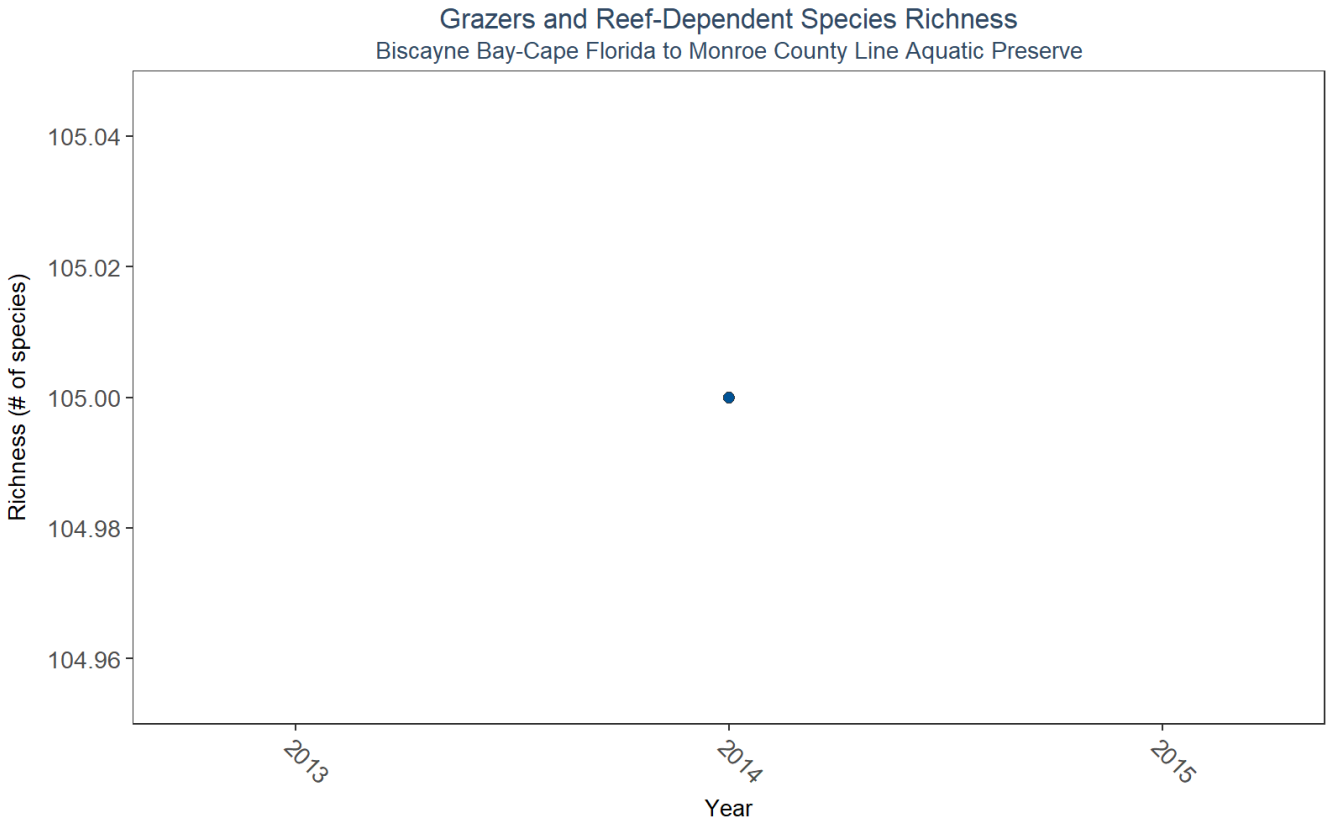
# Coral Reef

The data file used is: **All_CORAL_Parameters-2024-Jul-02.txt**




| N_Years | SufficientData | EarliestYear | LatestYear | N_Data | Min | Max | Median | Mean | StDev | LME_Intercept | LME_Slope | LME_p |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9 | 1 | 2013 | 2021 | 72 | 0 | 1 | 0 | 0.14 | 0.35 | 12.75 | -0.01 | 0.6972 |

*LME_p < 0.00005 appear as 0 due to rounding.*




| N_Years | EarliestYear | LatestYear | N_Data | Min | Max | Median | Mean | StDev | Year_MinRichness | Year_MaxRichness |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2014 | 2014 | 2 | 105 | 105 | 105 | 105 | 0 | 2014 | 2014 |