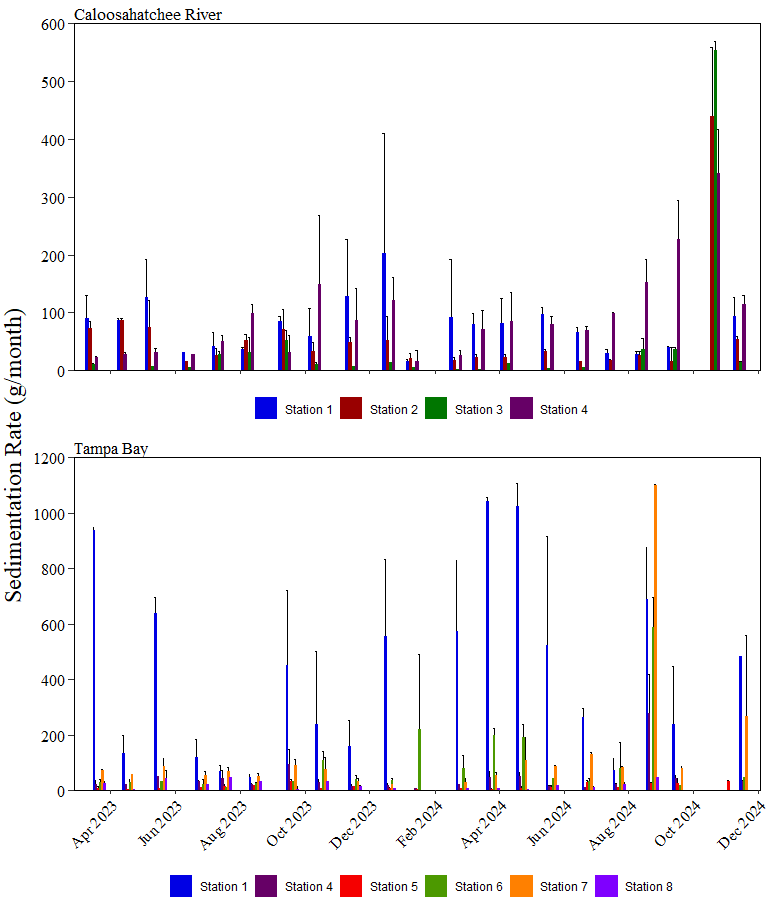
Sediment Trap Summary

2024-12-13

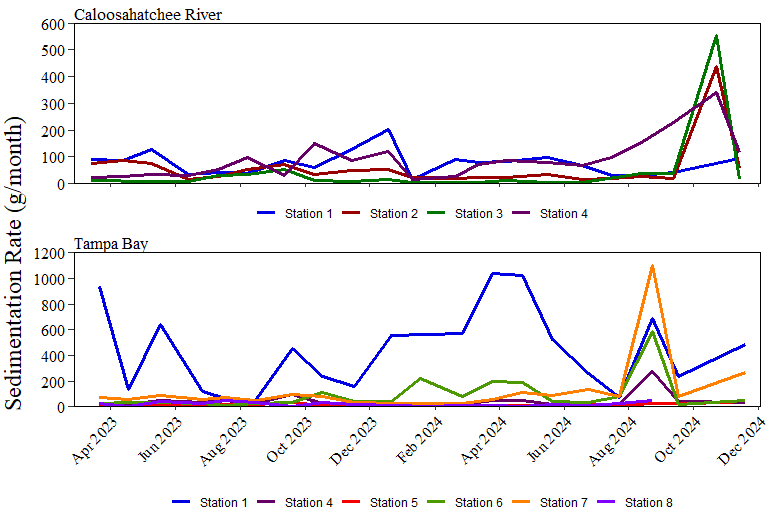
This report provides summary tables and figures for the sediment trap data collected at Caloosahatchee River estuary and Tampa Bay estuary stations from December 2022 through November 2024. Monthly data is standardized to a 28-day month unless otherwise noted. When possible, data is extrapolated to the entire sample collected based on crucible sub-sample information.

## Sedimentation rate

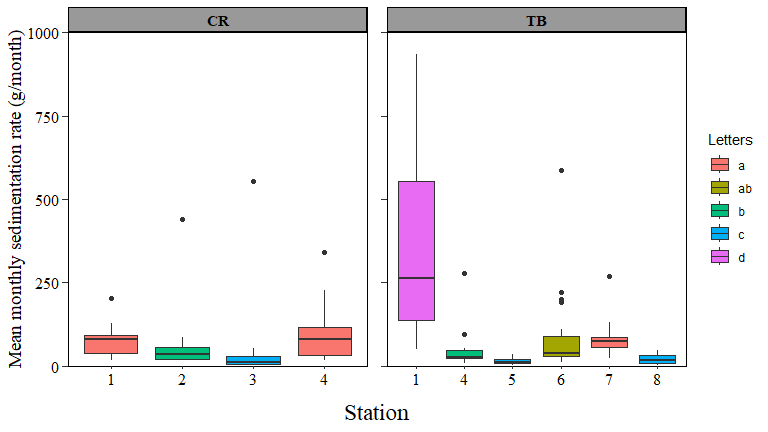
Oyster reefs in the Caloosahatchee River estuary averaged sedimentation rates of 68.9 g/month (Table 1, Figure 1-2). The lowest sedimentation rate occurred at station 3 (mean: 45.5 g/month) and the highest occurred at station 4 (mean: 93.7 g/month). Overall, the lowest single month sedimentation rate (2.8 g/month) occurred in March 2024 at station 3 while the highest (553.5 g/month) occurred in October 2024 at station 3 (Table 2).  
  
Oyster reefs in the Tampa Bay estuary had an average sedimentation rate of 126 g/month (Table 1, Figure 1-2). The lowest sedimentation rate occurred at station 5 (mean: 15.5 g/month) and the highest occurred at station 1 (mean: 433.7 g/month). The lowest single station sedimentation rate (2.4 g/month) occurred in January 2024 at station 8 while the highest (1099.7 g/month) occurred in August 2024 at station 7 (Table 2).  
  
Sedimentation rates were significantly different between estuaries (F(1,187) = 11.72, p = 0.001) and among stations (F(8,187) = 27.55, p = 0) (Figure 3, Table 3).  
  
{Include text about between estuaries and among stations. Tables 4 & 5 and Tables 6 & 7.}



**Figure 1.** Mean monthly sedimentation rate (± S.D.) at stations in Caloosahatchee River and Tampa Bay. Please note differences in magnitude between the y-axes.



**Figure 2.** Mean monthly sedimentation rate at stations in Caloosahatchee River and Tampa Bay. Please note differences in magnitude between the y-axes.



**Figure 3.** Mean monthly sedimentation rates at stations in Caloosahatchee River and Tampa Bay. Colors indicate significant groupings (alpha = 0.05). Rates are standarized to a 28-day month.

Table 1. Sedimentation rates (g/month) by station and overall during the project. Rates are standardized to 28-day months.

| **Estuary** | **Station** | **MeanRate** | **sdRate** | **MinRate** | **MaxRate** |
| --- | --- | --- | --- | --- | --- |
| CR |  |  |  |  |  |
|  | 1 | 75.85 | 61.83 | 12.45 | 348.70 |
|  | 2 | 58.46 | 91.70 | 0.66 | 522.68 |
|  | 3 | 45.52 | 124.07 | 2.80 | 563.52 |
|  | 4 | 93.72 | 82.98 | 3.41 | 393.91 |
|  |  | 68.85 | 93.01 | 0.66 | 563.52 |
| TB |  |  |  |  |  |
|  | 1 | 433.70 | 347.56 | 40.41 | 1,081.46 |
|  | 4 | 44.70 | 63.70 | 7.84 | 376.96 |
|  | 5 | 15.47 | 10.80 | 2.90 | 40.37 |
|  | 6 | 98.93 | 144.48 | 9.65 | 665.19 |
|  | 7 | 137.27 | 244.55 | 19.40 | 1,100.90 |
|  | 8 | 18.95 | 15.80 | 0.32 | 63.95 |
|  |  | 126.03 | 234.50 | 0.32 | 1,100.90 |

Table 2. Minimum and maximum sedimentation rates per station and the Month and Year in which the minimum or maximum occurred.

| **Measure** | **Estuary** | **Station** | **Type** | **Year** | **Month** | **Value** |
| --- | --- | --- | --- | --- | --- | --- |
| Sedimentation | CR | 1 | Min Rate | 2024 | 01 | 15.49 |
| Max Rate | 2023 | 12 | 202.14 |
| 2 | Min Rate | 2024 | 06 | 15.94 |
| Max Rate | 2024 | 10 | 438.89 |
| 3 | Min Rate | 2024 | 03 | 2.85 |
| Max Rate | 2024 | 10 | 553.50 |
| 4 | Min Rate | 2024 | 01 | 16.56 |
| Max Rate | 2024 | 10 | 341.23 |
| TB | 1 | Min Rate | 2023 | 08 | 49.52 |
| Max Rate | 2024 | 03 | 1,041.99 |
| 4 | Min Rate | 2024 | 01 | 8.07 |
| Max Rate | 2024 | 08 | 278.98 |
| 5 | Min Rate | 2024 | 01 | 3.11 |
| Max Rate | 2023 | 09 | 35.33 |
| 6 | Min Rate | 2023 | 07 | 11.11 |
| Max Rate | 2024 | 08 | 586.78 |
| 7 | Min Rate | 2023 | 12 | 23.13 |
| Max Rate | 2024 | 08 | 1,099.68 |
| 8 | Min Rate | 2024 | 01 | 2.43 |
| Max Rate | 2023 | 07 | 46.95 |

Table 3. Analysis of sedimentation rates (g/month) by estuary and station. Permutation ANOVA using 10,000 permutations. Red text indicates signifcance alpha < 0.05.

| **Factors** | **df** | **SS** | **MS** | **F** | **Pr** |
| --- | --- | --- | --- | --- | --- |
| Estuary | 1 | 1.57 | 1.57 | 11.72 | 0.001 |
| Station\_code | 8 | 29.56 | 3.70 | 27.55 | 0.000 |
| Residuals | 187 | 25.08 | 0.13 |  |  |

Table 4. Mean sedimentation rates (g/month) per estuary. Letters are determined based on pairwise permutation two-sample independence analysis.

| **Estuary** | **n** | **mean** | **sd** | **lower** | **upper** | **Letters** |
| --- | --- | --- | --- | --- | --- | --- |
| CR | 81 | 68.22 | 88.31 | -20.09 | 156.52 | a |
| TB | 116 | 123.06 | 223.64 | -100.57 | 346.70 | a |

Table 5. Pairwise two-sample permutation post-hoc comparisons of sedimentation rates (g/month) per estuary.

| **Comparison** | **Stat** | **p.value** | **p.adjust** |
| --- | --- | --- | --- |
| CR - TB = 0 | -0.6052 | 0.545 | 0.545 |

Table 6. Mean sedimentation rates (g/month) per station. Letters are determined based on pairwise permutation two-sample independence analysis.

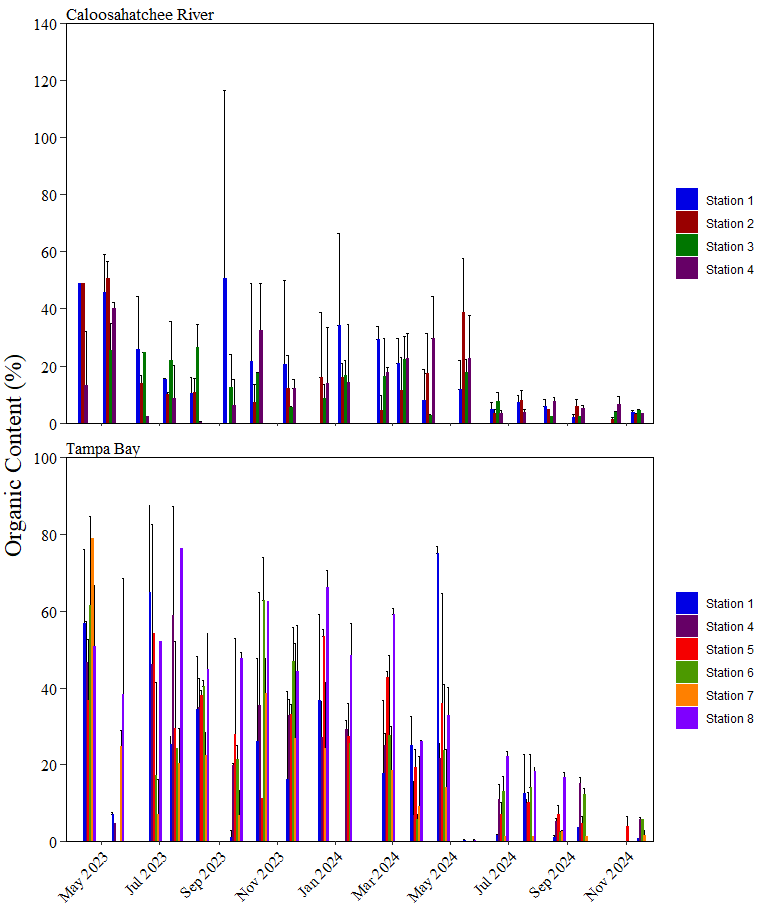
| **Station\_code** | **n** | **mean** | **sd** | **lower** | **upper** | **Letters** |
| --- | --- | --- | --- | --- | --- | --- |
| CR1 | 20 | 75.85 | 44.15 | 31.70 | 120.01 | a |
| CR2 | 21 | 58.46 | 90.02 | -31.56 | 148.47 | b |
| CR3 | 19 | 44.49 | 124.06 | -79.57 | 168.55 | c |
| CR4 | 21 | 92.17 | 78.03 | 14.14 | 170.21 | a |
| TB1 | 19 | 435.04 | 325.10 | 109.94 | 760.14 | d |
| TB4 | 20 | 44.89 | 58.51 | -13.62 | 103.39 | b |
| TB5 | 20 | 15.06 | 9.77 | 5.29 | 24.83 | c |
| TB6 | 20 | 93.80 | 132.20 | -38.40 | 226.00 | ab |
| TB7 | 19 | 135.25 | 239.38 | -104.13 | 374.62 | a |
| TB8 | 18 | 20.27 | 15.32 | 4.95 | 35.60 | c |

Table 7. Pairwise two-sample permutation post-hoc comparisons of sedimentation rates (g/month) per station. Red text indicates signifcance alpha < 0.05.

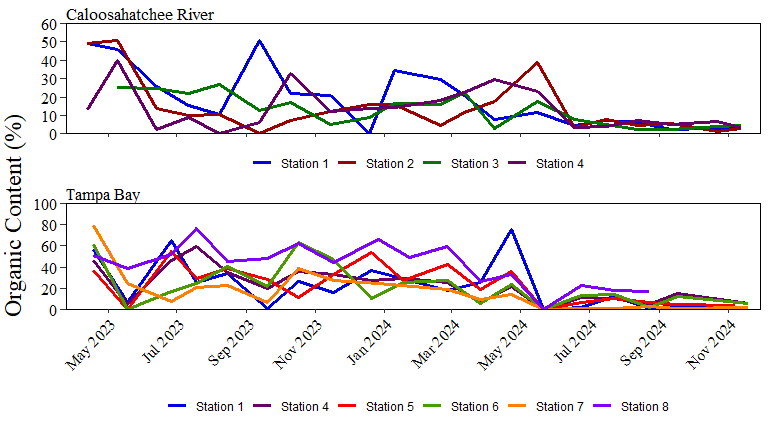
| **Comparison** | **Stat** | **p.value** | **p.adjust** |
| --- | --- | --- | --- |
| CR1 - CR2 = 0 | 2.192 | 0.03 | 0.04 |
| CR1 - CR3 = 0 | 3.845 | 0.00 | 0.00 |
| CR1 - CR4 = 0 | -0.2791 | 0.78 | 0.80 |
| CR1 - TB4 = 0 | 2.901 | 0.00 | 0.01 |
| CR1 - TB1 = 0 | -4.347 | 0.00 | 0.00 |
| CR1 - TB5 = 0 | 4.987 | 0.00 | 0.00 |
| CR1 - TB6 = 0 | 0.6286 | 0.53 | 0.57 |
| CR1 - TB7 = 0 | -0.9909 | 0.32 | 0.39 |
| CR1 - TB8 = 0 | 4.282 | 0.00 | 0.00 |
| CR2 - CR3 = 0 | 2.733 | 0.01 | 0.01 |
| CR2 - CR4 = 0 | -2.223 | 0.03 | 0.04 |
| CR2 - TB4 = 0 | 0.8161 | 0.41 | 0.49 |
| CR2 - TB1 = 0 | -4.821 | 0.00 | 0.00 |
| CR2 - TB5 = 0 | 3.887 | 0.00 | 0.00 |
| CR2 - TB6 = 0 | -1.268 | 0.20 | 0.26 |
| CR2 - TB7 = 0 | -2.662 | 0.01 | 0.01 |
| CR2 - TB8 = 0 | 3.068 | 0.00 | 0.00 |
| CR3 - CR4 = 0 | -3.833 | 0.00 | 0.00 |
| CR3 - TB4 = 0 | -2.233 | 0.03 | 0.04 |
| CR3 - TB1 = 0 | -4.994 | 0.00 | 0.00 |
| CR3 - TB5 = 0 | 0.4221 | 0.67 | 0.70 |
| CR3 - TB6 = 0 | -3.235 | 0.00 | 0.00 |
| CR3 - TB7 = 0 | -3.935 | 0.00 | 0.00 |
| CR3 - TB8 = 0 | -0.07882 | 0.94 | 0.94 |
| CR4 - TB4 = 0 | 2.852 | 0.00 | 0.01 |
| CR4 - TB1 = 0 | -4.099 | 0.00 | 0.00 |
| CR4 - TB5 = 0 | 4.828 | 0.00 | 0.00 |
| CR4 - TB6 = 0 | 0.8056 | 0.42 | 0.49 |
| CR4 - TB7 = 0 | -0.6625 | 0.51 | 0.57 |
| CR4 - TB8 = 0 | 4.182 | 0.00 | 0.00 |
| TB4 - TB1 = 0 | -4.952 | 0.00 | 0.00 |
| TB4 - TB5 = 0 | 3.416 | 0.00 | 0.00 |
| TB4 - TB6 = 0 | -1.918 | 0.06 | 0.07 |
| TB4 - TB7 = 0 | -3.197 | 0.00 | 0.00 |
| TB4 - TB8 = 0 | 2.54 | 0.01 | 0.02 |
| TB1 - TB5 = 0 | 5.526 | 0.00 | 0.00 |
| TB1 - TB6 = 0 | 4.158 | 0.00 | 0.00 |
| TB1 - TB7 = 0 | 3.672 | 0.00 | 0.00 |
| TB1 - TB8 = 0 | 5.161 | 0.00 | 0.00 |
| TB5 - TB6 = 0 | -4.183 | 0.00 | 0.00 |
| TB5 - TB7 = 0 | -4.864 | 0.00 | 0.00 |
| TB5 - TB8 = 0 | -0.6397 | 0.52 | 0.57 |
| TB6 - TB7 = 0 | -1.339 | 0.18 | 0.23 |
| TB6 - TB8 = 0 | 3.521 | 0.00 | 0.00 |
| TB7 - TB8 = 0 | 4.268 | 0.00 | 0.00 |

## Percent organic content

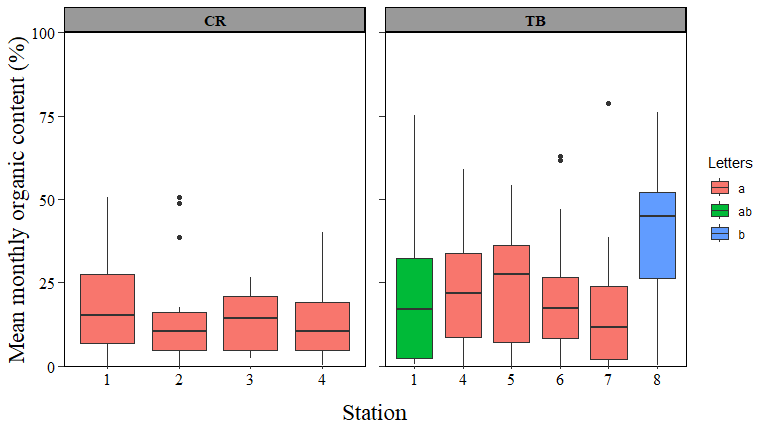
Sediment on oyster reefs in the Caloosahatchee River estuary averaged 15% organic content (Table 8, Figure 4-5). The lowest percent organic content occurred at station 3 (mean: 12.9%) and the highest occurred at station 1 (mean: 19.3%). Overall, the lowest single month percent organic content (0, 0%) occurred in September 2023, December 2023 at station 2, 1 while the highest (50.6 g/month) occurred in May 2023 at station 2 (Table 9).  
  
Sediment on oyster reefs in the Tampa Bay estuary averaged 24.3% organic content (Table 8, Figure 4-5). The lowest percent organic content occurred at station 7 (mean: 14.9%) and the highest occurred at station 8 (mean: 39.5%). The lowest single station sedimentation rate (0, 0, 0, 0, 0%) occurred in May 2023, May 2023, May 2024, May 2024, May 2024 at station 5, 6, 4, 5, 7 while the highest (78.8%) occurred in April 2023 at station 7 (Table 9).  
  
The percentages of organic content in samples were significantly different among stations (F(8,177) = 2.94, p = 0.004) but not between estuaries (F(1,177) = 1.23, p = 0.269) (Figure 6, Table 10).  
  
{Include text about among stations. Tables 11 & 12.}



**Figure 4.** Monthly organic content (%) of sediment at stations in Caloosahatchee River and Tampa Bay.



**Figure 5.** Monthly organic content (%) of sediment at stations in Caloosahatchee River and Tampa Bay.



**Figure 6.** Mean monthly percent organic content from stations in Caloosahatchee River and Tampa Bay. Colors indicate significant groupings (alpha = 0.05). Rates are standarized to a 28-day month.

Table 8. Percent organic content (%) by station and overall during the project.

| **Estuary** | **Station** | **MeanPct** | **sdPct** | **MinPct** | **MaxPct** |
| --- | --- | --- | --- | --- | --- |
| CR |  |  |  |  |  |
|  | 1 | 19.28 | 21.52 | 0.00 | 97.11 |
|  | 2 | 14.18 | 15.84 | 0.00 | 54.78 |
|  | 3 | 12.94 | 9.78 | 2.11 | 32.13 |
|  | 4 | 13.58 | 13.32 | 0.00 | 44.00 |
|  |  | 15.02 | 15.84 | 0.00 | 97.11 |
| TB |  |  |  |  |  |
|  | 1 | 23.25 | 24.81 | 0.00 | 80.83 |
|  | 4 | 23.47 | 18.98 | 0.00 | 78.91 |
|  | 5 | 23.40 | 18.79 | 0.00 | 56.18 |
|  | 6 | 22.92 | 20.59 | 0.00 | 77.83 |
|  | 7 | 14.92 | 17.35 | 0.00 | 78.82 |
|  | 8 | 39.50 | 20.39 | 0.13 | 76.20 |
|  |  | 24.28 | 21.24 | 0.00 | 80.83 |

Table 9. Minimum and maximum percent organic content per station and the Month and Year in which the minimum or maximum occurred.

| **Measure** | **Estuary** | **Station** | **Type** | **Year** | **Month** | **Value** |
| --- | --- | --- | --- | --- | --- | --- |
| Percent Organic | CR | 1 | Min Percent | 2023 | 12 | 0.00 |
| Max Percent | 2023 | 09 | 50.56 |
| 2 | Min Percent | 2023 | 09 | 0.00 |
| Max Percent | 2023 | 05 | 50.65 |
| 3 | Min Percent | 2024 | 08 | 2.20 |
| Max Percent | 2023 | 08 | 26.63 |
| 4 | Min Percent | 2023 | 08 | 0.21 |
| Max Percent | 2023 | 05 | 40.01 |
| TB | 1 | Min Percent | 2024 | 05 | 0.39 |
| Max Percent | 2024 | 04 | 75.11 |
| 4 | Min Percent | 2024 | 05 | 0.00 |
| Max Percent | 2023 | 07 | 58.88 |
| 5 | Min Percent | 2023 | 05 | 0.00 |
| Min Percent | 2024 | 05 | 0.00 |
| Max Percent | 2023 | 06 | 54.13 |
| 6 | Min Percent | 2023 | 05 | 0.00 |
| Max Percent | 2023 | 10 | 62.90 |
| 7 | Min Percent | 2024 | 05 | 0.00 |
| Max Percent | 2023 | 04 | 78.82 |
| 8 | Min Percent | 2024 | 05 | 0.30 |
| Max Percent | 2023 | 07 | 76.20 |

Table 10. Analysis of organic content (%) by estuary and station. Permutation ANOVA using 10,000 permutations. Red text indicates signifcance alpha < 0.05.

| **Factors** | **df** | **SS** | **MS** | **F** | **Pr** |
| --- | --- | --- | --- | --- | --- |
| Estuary | 1 | 356.81 | 356.81 | 1.23 | 0.269 |
| Station\_code | 8 | 6,819.73 | 852.47 | 2.94 | 0.004 |
| Residuals | 177 | 51,383.35 | 290.30 |  |  |

Table 11. Mean organic content (%) per station. Letters are determined based on pairwise permutation two-sample independence analysis.

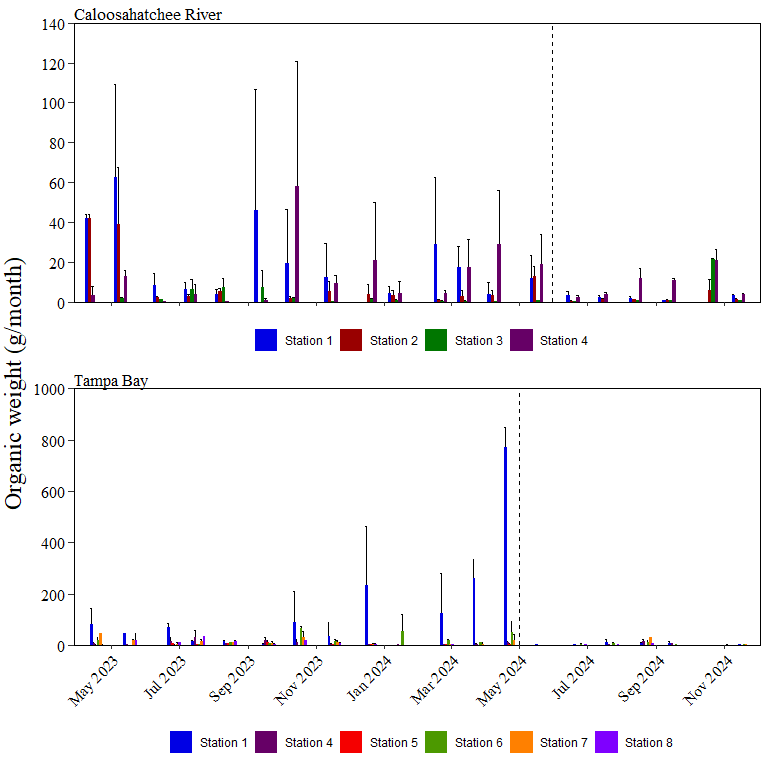
| **Station\_code** | **n** | **mean** | **sd** | **lower** | **upper** | **Letters** |
| --- | --- | --- | --- | --- | --- | --- |
| CR1 | 19 | 19.28 | 16.06 | 3.22 | 35.34 | a |
| CR2 | 20 | 14.18 | 14.74 | -0.57 | 28.92 | a |
| CR3 | 18 | 13.27 | 8.74 | 4.52 | 22.01 | a |
| CR4 | 20 | 13.30 | 11.12 | 2.18 | 24.42 | a |
| TB1 | 18 | 22.63 | 23.21 | -0.58 | 45.84 | ab |
| TB4 | 19 | 22.98 | 16.59 | 6.39 | 39.57 | a |
| TB5 | 19 | 23.28 | 17.69 | 5.59 | 40.97 | a |
| TB6 | 19 | 21.90 | 19.04 | 2.86 | 40.94 | a |
| TB7 | 18 | 16.70 | 19.23 | -2.53 | 35.92 | a |
| TB8 | 17 | 41.63 | 20.02 | 21.62 | 61.65 | b |

Table 12. Pairwise two-sample permutation post-hoc comparisons of organic content (%) per station. Red text indicates signifcance alpha < 0.05.

| **Comparison** | **Stat** | **p.value** | **p.adjust** |
| --- | --- | --- | --- |
| CR1 - CR2 = 0 | 1.034 | 0.30 | 0.52 |
| CR1 - CR3 = 0 | 1.385 | 0.17 | 0.35 |
| CR1 - CR4 = 0 | 1.344 | 0.18 | 0.35 |
| CR1 - TB4 = 0 | -0.7026 | 0.48 | 0.70 |
| CR1 - TB1 = 0 | -0.5177 | 0.60 | 0.82 |
| CR1 - TB5 = 0 | -0.7332 | 0.46 | 0.70 |
| CR1 - TB6 = 0 | -0.4629 | 0.64 | 0.82 |
| CR1 - TB7 = 0 | 0.4499 | 0.65 | 0.82 |
| CR1 - TB8 = 0 | -3.177 | 0.00 | 0.01 |
| CR2 - CR3 = 0 | 0.2306 | 0.82 | 0.96 |
| CR2 - CR4 = 0 | 0.2153 | 0.83 | 0.96 |
| CR2 - TB4 = 0 | -1.708 | 0.09 | 0.24 |
| CR2 - TB1 = 0 | -1.339 | 0.18 | 0.35 |
| CR2 - TB5 = 0 | -1.703 | 0.09 | 0.24 |
| CR2 - TB6 = 0 | -1.402 | 0.16 | 0.35 |
| CR2 - TB7 = 0 | -0.4614 | 0.64 | 0.82 |
| CR2 - TB8 = 0 | -3.778 | 0.00 | 0.00 |
| CR3 - CR4 = 0 | -0.009278 | 0.99 | 0.99 |
| CR3 - TB4 = 0 | -2.099 | 0.04 | 0.15 |
| CR3 - TB1 = 0 | -1.567 | 0.12 | 0.28 |
| CR3 - TB5 = 0 | -2.059 | 0.04 | 0.15 |
| CR3 - TB6 = 0 | -1.707 | 0.09 | 0.24 |
| CR3 - TB7 = 0 | -0.6943 | 0.49 | 0.70 |
| CR3 - TB8 = 0 | -4.027 | 0.00 | 0.00 |
| CR4 - TB4 = 0 | -2.055 | 0.04 | 0.15 |
| CR4 - TB1 = 0 | -1.573 | 0.12 | 0.28 |
| CR4 - TB5 = 0 | -2.029 | 0.04 | 0.15 |
| CR4 - TB6 = 0 | -1.69 | 0.09 | 0.24 |
| CR4 - TB7 = 0 | -0.6809 | 0.50 | 0.70 |
| CR4 - TB8 = 0 | -4.057 | 0.00 | 0.00 |
| TB4 - TB1 = 0 | 0.05351 | 0.96 | 0.98 |
| TB4 - TB5 = 0 | -0.05428 | 0.96 | 0.98 |
| TB4 - TB6 = 0 | 0.1887 | 0.85 | 0.96 |
| TB4 - TB7 = 0 | 1.064 | 0.29 | 0.52 |
| TB4 - TB8 = 0 | -2.746 | 0.01 | 0.04 |
| TB1 - TB5 = 0 | -0.09692 | 0.92 | 0.98 |
| TB1 - TB6 = 0 | 0.1064 | 0.92 | 0.98 |
| TB1 - TB7 = 0 | 0.8386 | 0.40 | 0.65 |
| TB1 - TB8 = 0 | -2.394 | 0.02 | 0.08 |
| TB5 - TB6 = 0 | 0.2339 | 0.81 | 0.96 |
| TB5 - TB7 = 0 | 1.081 | 0.28 | 0.52 |
| TB5 - TB8 = 0 | -2.65 | 0.01 | 0.05 |
| TB6 - TB7 = 0 | 0.8304 | 0.41 | 0.65 |
| TB6 - TB8 = 0 | -2.728 | 0.01 | 0.04 |
| TB7 - TB8 = 0 | -3.193 | 0.00 | 0.01 |

## Organic weight

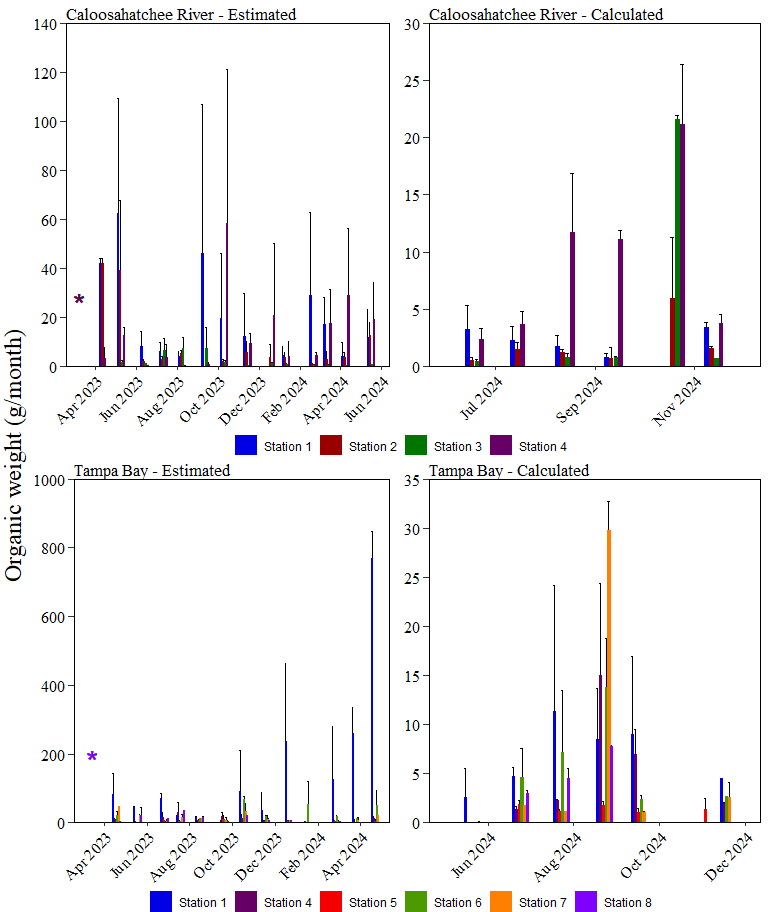
From March 2023 through April 2024 for Tampa Bay samples and March 2023 through May 2024 for Caloosahatchee samples, the portion of samples used for ash weight processing was estimated. Beginning in May (Tampa Bay) and June (Caloosahatchee) 2024, the portion of samples used for ash weight processing were calculated by dividing the crucible sample dry weight (g) by the total sample dry weight (g). Due to this difference, analyses were performed on the “estimated” data and on the “calculated” data to determine organic weight of samples (Figure 7.)



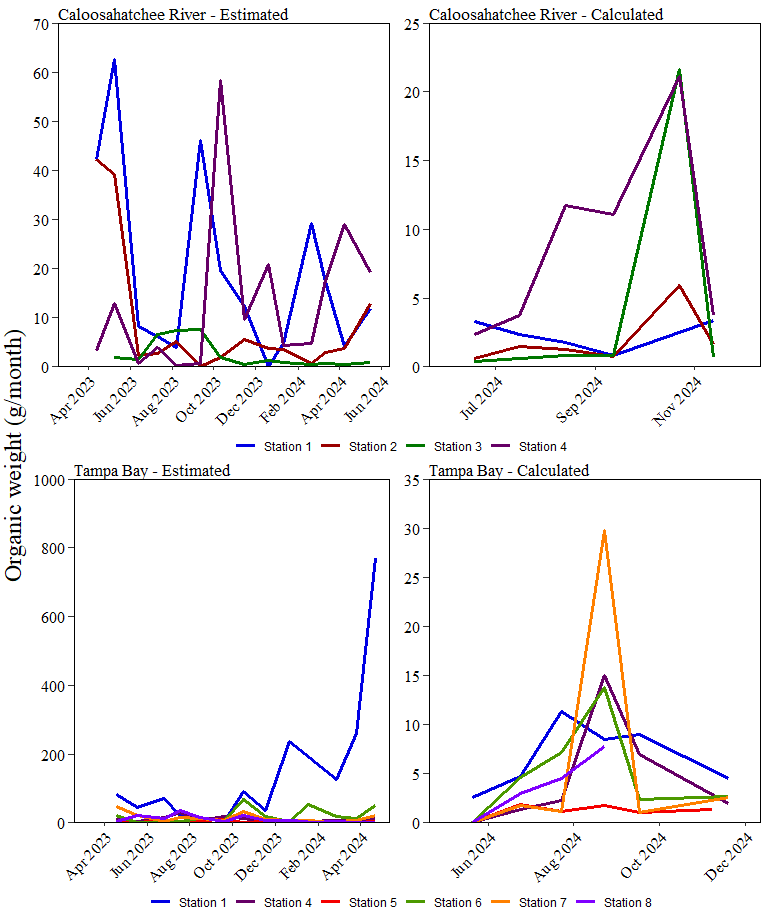
**Figure 7.** Mean monthly organic weight of sediment (± S.D.) at stations in Caloosahatchee River and Tampa Bay. The dashed vertical lines note when sample proportions change from ‘estimated’ to ’calculted. Please note differences in magnitude between the y-axes.

### Estimated organic weights

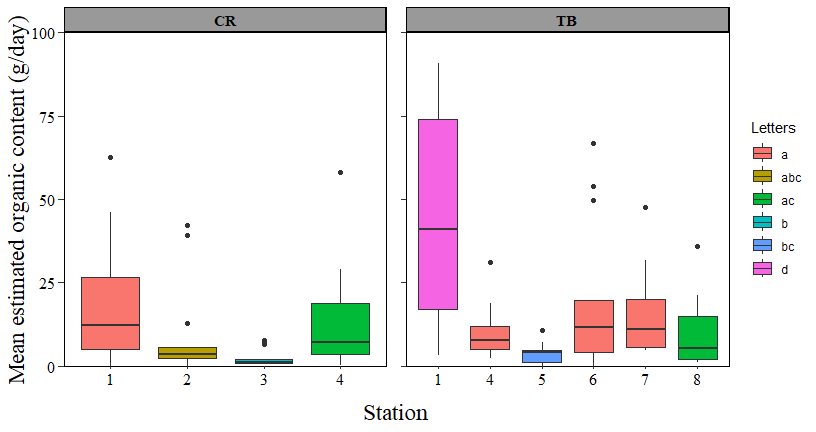
Sediment on oyster reefs in the Caloosahatchee River estuary averaged estimated organic weights of 11.3 g/month (Table 13, Figure 8-9). The lowest estimated organic weight occurred at station 3 (mean: 2.5 g/month) and the highest occurred at station 1 (mean: 19.2 g/month). Overall, the lowest single month organic weight (0, 0 g/month) occurred in September 2023, December 2023 at station 2, 1 while the highest (62.5 g/month) occurred in May 2023 at station 1 (Table 14).  
  
Sediment on oyster reefs in the Tampa Bay estuary averaged estimated organic weights of 34.5 g/month (Table 13, Figure 8-9). The lowest estimated sedimentation rate occurred at station 5 (mean: 4.1 g/month) and the highest occurred at station 1 (mean: 146.2 g/month). The lowest single station sedimentation rate (0, 0 g/month) occurred in May 2023, May 2023 at station 5, 6 while the highest (769.8 g/month) occurred in April 2024 at station 1 (Table 14).  
  
Estimated organic weights were significantly different among stations (F(8,121) = 8.91, p = 0) but not between estuaries (F(1,121) = 1.44, p = 0.233) (Figure 9, Table 15).  
  
{Include text about among stations. Tables 16 & 17.}



**Figure 8.** Mean monthly estimated (left) and calculated (right) organic weight of sediment at stations in Caloosahatchee River (top) and Tampa Bay (bottom). Please note differences in magnitude between the y-axes.



**Figure 9.** Mean monthly estimated (left) and calculated (right) organic weight of sediment at stations in Caloosahatchee River (top) and Tampa Bay (bottom). Please note differences in magnitude between the y-axes.



**Figure 10.** Mean estimated monthly organic content (g/month) of samples from stations in Caloosahatchee River and Tampa Bay. Colors indicate significant groupings (alpha = 0.05).

Table 13. Estimated and calculated organic weight (g/month) of sediment by station and overall during the project. Values are standardized to 28-day months.

| **Type** | **Estuary** | **Station** | **MeanWt** | **sdWt** | **MinWt** | **MaxWt** | **MeanSample** | **sdSample** | **MinSample** | **MaxSample** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Estimated |  |  |  |  |  |  |  |  |  |  |
|  | CR | 1 | 19.16 | 25.62 | 0.00 | 95.72 | 5.46 | 6.01 | 0.00 | 22.28 |
|  | 2 | 9.04 | 14.71 | 0.00 | 59.26 | 4.55 | 6.52 | 0.00 | 29.63 |
|  | 3 | 2.47 | 3.51 | 0.19 | 13.38 | 1.73 | 1.89 | 0.19 | 6.69 |
|  | 4 | 13.69 | 21.81 | 0.00 | 102.62 | 5.06 | 6.30 | 0.00 | 29.00 |
|  |  | 11.31 | 19.38 | 0.00 | 102.62 | 4.26 | 5.69 | 0.00 | 29.63 |
|  | TB | 1 | 146.23 | 219.31 | 0.00 | 825.86 | 15.74 | 21.24 | 0.00 | 82.59 |
|  | 4 | 10.45 | 10.96 | 0.21 | 51.63 | 4.91 | 4.84 | 0.15 | 25.82 |
|  | 5 | 4.08 | 3.88 | 0.00 | 18.38 | 3.02 | 2.41 | 0.00 | 9.93 |
|  | 6 | 21.87 | 27.47 | 0.00 | 100.21 | 6.57 | 7.17 | 0.00 | 30.30 |
|  | 7 | 13.92 | 13.74 | 0.00 | 48.09 | 5.66 | 6.42 | 0.00 | 24.04 |
|  | 8 | 8.37 | 10.57 | 0.16 | 38.18 | 4.11 | 4.00 | 0.14 | 17.89 |
|  |  | 34.52 | 103.07 | 0.00 | 825.86 | 6.71 | 10.66 | 0.00 | 82.59 |
| Calculated |  |  |  |  |  |  |  |  |  |  |
|  | CR | 1 | 2.32 | 1.32 | 0.65 | 4.71 | 1.11 | 0.54 | 0.43 | 1.91 |
|  | 2 | 1.92 | 2.53 | 0.05 | 9.71 | 0.83 | 0.51 | 0.05 | 1.78 |
|  | 3 | 4.87 | 8.83 | 0.23 | 21.82 | 0.57 | 0.20 | 0.23 | 0.96 |
|  | 4 | 8.96 | 7.22 | 1.67 | 24.85 | 1.14 | 0.37 | 0.45 | 1.65 |
|  |  | 4.60 | 6.34 | 0.05 | 24.85 | 0.92 | 0.47 | 0.05 | 1.91 |
|  | TB | 1 | 6.96 | 6.09 | 0.50 | 20.42 | 0.75 | 0.67 | 0.07 | 2.14 |
|  | 4 | 4.59 | 6.09 | 0.00 | 21.59 | 1.43 | 1.20 | 0.00 | 4.11 |
|  | 5 | 1.22 | 0.75 | 0.00 | 2.14 | 0.83 | 0.51 | 0.00 | 1.55 |
|  | 6 | 5.32 | 5.53 | 0.00 | 17.31 | 1.25 | 0.89 | 0.00 | 2.48 |
|  | 7 | 6.04 | 11.17 | 0.00 | 31.89 | 0.43 | 0.30 | 0.00 | 0.99 |
|  | 8 | 3.82 | 2.99 | 0.02 | 7.82 | 1.76 | 1.16 | 0.02 | 3.06 |
|  |  | 4.66 | 6.52 | 0.00 | 31.89 | 1.03 | 0.91 | 0.00 | 4.11 |

Table 14. Minimum and maximum estaimted and calculated organic weights of samples per station and the Month and Year in which the minimum or maximum occurred.

| **Measure** | **Type** | **Estuary** | **Station** | **Extreme** | **Year** | **Month** | **Value** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Organic Weight | Estimated | CR | 1 | Min Daily Org Wt | 2023 | 12 | 0.00 |
| Max Daily Org Wt | 2023 | 05 | 62.51 |
| 2 | Min Daily Org Wt | 2023 | 09 | 0.00 |
| Max Daily Org Wt | 2023 | 04 | 42.19 |
| 3 | Min Daily Org Wt | 2024 | 04 | 0.36 |
| Max Daily Org Wt | 2023 | 09 | 7.54 |
| 4 | Min Daily Org Wt | 2023 | 08 | 0.24 |
| Max Daily Org Wt | 2023 | 10 | 58.22 |
| TB | 1 | Min Daily Org Wt | 2023 | 09 | 3.24 |
| Max Daily Org Wt | 2024 | 04 | 769.84 |
| 4 | Min Daily Org Wt | 2024 | 01 | 2.37 |
| Max Daily Org Wt | 2023 | 07 | 31.04 |
| 5 | Min Daily Org Wt | 2023 | 05 | 0.00 |
| Max Daily Org Wt | 2023 | 09 | 10.72 |
| 6 | Min Daily Org Wt | 2023 | 05 | 0.00 |
| Max Daily Org Wt | 2023 | 10 | 66.79 |
| 7 | Min Daily Org Wt | 2023 | 06 | 4.55 |
| Max Daily Org Wt | 2023 | 04 | 47.72 |
| 8 | Min Daily Org Wt | 2024 | 01 | 1.20 |
| Max Daily Org Wt | 2023 | 07 | 35.78 |
| Calculated | CR | 1 | Min Daily Org Wt | 2024 | 09 | 0.84 |
| Max Daily Org Wt | 2024 | 11 | 3.39 |
| 2 | Min Daily Org Wt | 2024 | 06 | 0.56 |
| Max Daily Org Wt | 2024 | 10 | 5.93 |
| 3 | Min Daily Org Wt | 2024 | 06 | 0.41 |
| Max Daily Org Wt | 2024 | 10 | 21.62 |
| 4 | Min Daily Org Wt | 2024 | 06 | 2.37 |
| Max Daily Org Wt | 2024 | 10 | 21.11 |
| TB | 1 | Min Daily Org Wt | 2024 | 05 | 2.57 |
| Max Daily Org Wt | 2024 | 07 | 11.32 |
| 4 | Min Daily Org Wt | 2024 | 05 | 0.00 |
| Max Daily Org Wt | 2024 | 08 | 14.97 |
| 5 | Min Daily Org Wt | 2024 | 05 | 0.00 |
| Max Daily Org Wt | 2024 | 06 | 1.90 |
| 6 | Min Daily Org Wt | 2024 | 05 | 0.00 |
| Max Daily Org Wt | 2024 | 08 | 13.77 |
| 7 | Min Daily Org Wt | 2024 | 05 | 0.00 |
| Max Daily Org Wt | 2024 | 08 | 29.78 |
| 8 | Min Daily Org Wt | 2024 | 05 | 0.06 |
| Max Daily Org Wt | 2024 | 08 | 7.73 |

Table 15. Analysis of estimated organic content (g/month) by estuary and station. Permutation ANOVA using 10,000 permutations. Red text indicates signifcance alpha < 0.05.

| **Factors** | **df** | **SS** | **MS** | **F** | **Pr** |
| --- | --- | --- | --- | --- | --- |
| Estuary | 1 | 0.27 | 0.27 | 1.44 | 0.233 |
| Station\_code | 8 | 13.62 | 1.70 | 8.91 | 0.000 |
| Residuals | 121 | 23.10 | 0.19 |  |  |

Table 16. Mean estimated organic content (g/month) per station. Letters are determined based on pairwise permutation two-sample independence analysis.

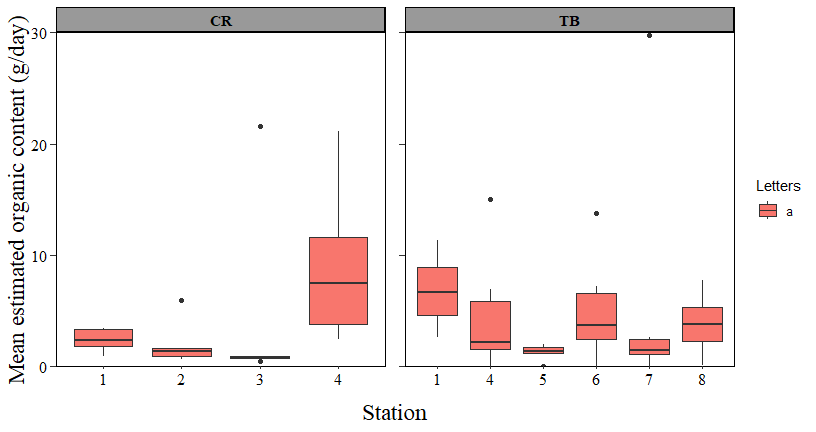
| **Station\_code** | **n** | **mean** | **sd** | **lower** | **upper** | **Letters** |
| --- | --- | --- | --- | --- | --- | --- |
| CR1 | 14 | 19.16 | 18.93 | 0.22 | 38.09 | a |
| CR2 | 14 | 9.04 | 13.77 | -4.73 | 22.81 | abc |
| CR3 | 13 | 2.44 | 2.76 | -0.32 | 5.20 | b |
| CR4 | 14 | 13.23 | 15.75 | -2.52 | 28.97 | ac |
| TB1 | 12 | 146.23 | 213.00 | -66.78 | 359.23 | d |
| TB4 | 13 | 10.14 | 8.10 | 2.04 | 18.24 | a |
| TB5 | 13 | 3.90 | 3.02 | 0.88 | 6.92 | bc |
| TB6 | 13 | 20.29 | 22.05 | -1.76 | 42.34 | a |
| TB7 | 12 | 15.33 | 13.17 | 2.16 | 28.50 | a |
| TB8 | 13 | 10.07 | 10.57 | -0.50 | 20.65 | ac |

Table 17. Pairwise two-sample permutation post-hoc comparisons of estimated organic content (g/month) per station. Red text indicates signifcance alpha < 0.05.

| **Comparison** | **Stat** | **p.value** | **p.adjust** |
| --- | --- | --- | --- |
| CR1 - CR2 = 0 | 1.906 | 0.06 | 0.12 |
| CR1 - CR3 = 0 | 3.315 | 0.00 | 0.01 |
| CR1 - CR4 = 0 | 1.025 | 0.31 | 0.42 |
| CR1 - TB4 = 0 | 0.9356 | 0.35 | 0.46 |
| CR1 - TB1 = 0 | -2.844 | 0.00 | 0.02 |
| CR1 - TB5 = 0 | 2.721 | 0.01 | 0.02 |
| CR1 - TB6 = 0 | 0.1421 | 0.89 | 0.91 |
| CR1 - TB7 = 0 | -0.02443 | 0.98 | 0.98 |
| CR1 - TB8 = 0 | 1.32 | 0.19 | 0.29 |
| CR2 - CR3 = 0 | 1.949 | 0.05 | 0.11 |
| CR2 - CR4 = 0 | -0.9043 | 0.37 | 0.46 |
| CR2 - TB4 = 0 | -1.395 | 0.16 | 0.26 |
| CR2 - TB1 = 0 | -3.633 | 0.00 | 0.00 |
| CR2 - TB5 = 0 | 0.9211 | 0.36 | 0.46 |
| CR2 - TB6 = 0 | -1.652 | 0.10 | 0.18 |
| CR2 - TB7 = 0 | -2.131 | 0.03 | 0.07 |
| CR2 - TB8 = 0 | -0.7527 | 0.45 | 0.53 |
| CR3 - CR4 = 0 | -2.574 | 0.01 | 0.03 |
| CR3 - TB4 = 0 | -3.387 | 0.00 | 0.00 |
| CR3 - TB1 = 0 | -4.108 | 0.00 | 0.00 |
| CR3 - TB5 = 0 | -1.414 | 0.16 | 0.26 |
| CR3 - TB6 = 0 | -3.026 | 0.00 | 0.01 |
| CR3 - TB7 = 0 | -3.693 | 0.00 | 0.00 |
| CR3 - TB8 = 0 | -2.671 | 0.01 | 0.02 |
| CR4 - TB4 = 0 | -0.2977 | 0.77 | 0.84 |
| CR4 - TB1 = 0 | -3.25 | 0.00 | 0.01 |
| CR4 - TB5 = 0 | 1.775 | 0.08 | 0.14 |
| CR4 - TB6 = 0 | -0.8198 | 0.41 | 0.50 |
| CR4 - TB7 = 0 | -1.15 | 0.25 | 0.36 |
| CR4 - TB8 = 0 | 0.2264 | 0.82 | 0.88 |
| TB4 - TB1 = 0 | -3.398 | 0.00 | 0.00 |
| TB4 - TB5 = 0 | 2.598 | 0.01 | 0.02 |
| TB4 - TB6 = 0 | -0.6942 | 0.49 | 0.56 |
| TB4 - TB7 = 0 | -1.213 | 0.23 | 0.34 |
| TB4 - TB8 = 0 | 0.6297 | 0.53 | 0.60 |
| TB1 - TB5 = 0 | 3.926 | 0.00 | 0.00 |
| TB1 - TB6 = 0 | 2.76 | 0.01 | 0.02 |
| TB1 - TB7 = 0 | 2.946 | 0.00 | 0.01 |
| TB1 - TB8 = 0 | 3.411 | 0.00 | 0.00 |
| TB5 - TB6 = 0 | -2.419 | 0.02 | 0.04 |
| TB5 - TB7 = 0 | -3.151 | 0.00 | 0.01 |
| TB5 - TB8 = 0 | -1.772 | 0.08 | 0.14 |
| TB6 - TB7 = 0 | -0.1789 | 0.86 | 0.90 |
| TB6 - TB8 = 0 | 1.081 | 0.28 | 0.39 |
| TB7 - TB8 = 0 | 1.555 | 0.12 | 0.21 |

### Calculated organic weights

Sediment on oyster reefs in the Caloosahatchee River estuary averaged calculated organic weights of 4.6 g/month (Table 13, Figure 8-9). The lowest calculated organic weight occurred at station 2 (mean: 1.9 g/month) and the highest occurred at station 4 (mean: 9 g/month). Overall, the lowest single month calculated organic weight (0.4 g/month) occurred in June 2024 at station 3 while the highest (21.6 g/month) occurred in October 2024 at station 3 (Table 14).  
  
Sediment on oyster reefs in the Tampa Bay estuary averaged estimated organic weights of 4.7 g/month (Table 13, Figure 8-9). The lowest estimated sedimentation rate occurred at station 5 (mean: 1.2 g/month) and the highest occurred at station 1 (mean: 7 g/month). The lowest single station sedimentation rate (0, 0, 0 g/month) occurred in May 2024, May 2024, May 2024 at station 4, 5, 7 while the highest (29.8 g/month) occurred in August 2024 at station 7 (Table 14).  
  
Neither factor was significant. Review coding.  
  
{Include text about among stations. Tables 19 & 20.}



**Figure 10.** Mean calculated monthly organic content (g/month) of samples from stations in Caloosahatchee River and Tampa Bay. Colors indicate significant groupings (alpha = 0.05).

Table 18. Analysis of calculated organic content (g/month) by estuary and station. Permutation ANOVA using 10,000 permutations. Red text indicates signifcance alpha < 0.05.

| **Factors** | **df** | **SS** | **MS** | **F** | **Pr** |
| --- | --- | --- | --- | --- | --- |
| Estuary | 1 | 0.02 | 0.02 | 0.18 | 0.676 |
| Station\_code | 8 | 1.82 | 0.23 | 1.83 | 0.095 |
| Residuals | 46 | 5.70 | 0.12 |  |  |

Table 19. Mean calculated organic content (g/month) per station. Letters are determined based on pairwise permutation two-sample independence analysis.

| **Station\_code** | **n** | **mean** | **sd** | **lower** | **upper** | **Letters** |
| --- | --- | --- | --- | --- | --- | --- |
| CR1 | 5 | 2.32 | 1.06 | 1.26 | 3.38 | a |
| CR2 | 6 | 1.92 | 2.01 | -0.09 | 3.93 | a |
| CR3 | 5 | 4.87 | 9.36 | -4.49 | 14.24 | a |
| CR4 | 6 | 8.96 | 7.18 | 1.78 | 16.15 | a |
| TB1 | 6 | 6.75 | 3.33 | 3.42 | 10.09 | a |
| TB4 | 6 | 4.58 | 5.61 | -1.02 | 10.19 | a |
| TB5 | 6 | 1.22 | 0.68 | 0.54 | 1.89 | a |
| TB6 | 6 | 5.09 | 4.88 | 0.21 | 9.97 | a |
| TB7 | 6 | 6.04 | 11.66 | -5.63 | 17.70 | a |
| TB8 | 4 | 3.82 | 3.20 | 0.62 | 7.01 | a |

Table 20. Pairwise two-sample permutation post-hoc comparisons of calculated organic content (g/month) per station. Red text indicates signifcance alpha < 0.05.

| **Comparison** | **Stat** | **p.value** | **p.adjust** |
| --- | --- | --- | --- |
| CR1 - CR2 = 0 | 1.906 | 0.06 | 0.12 |
| CR1 - CR3 = 0 | 3.315 | 0.00 | 0.01 |
| CR1 - CR4 = 0 | 1.025 | 0.31 | 0.42 |
| CR1 - TB4 = 0 | 0.9356 | 0.35 | 0.46 |
| CR1 - TB1 = 0 | -2.844 | 0.00 | 0.02 |
| CR1 - TB5 = 0 | 2.721 | 0.01 | 0.02 |
| CR1 - TB6 = 0 | 0.1421 | 0.89 | 0.91 |
| CR1 - TB7 = 0 | -0.02443 | 0.98 | 0.98 |
| CR1 - TB8 = 0 | 1.32 | 0.19 | 0.29 |
| CR2 - CR3 = 0 | 1.949 | 0.05 | 0.11 |
| CR2 - CR4 = 0 | -0.9043 | 0.37 | 0.46 |
| CR2 - TB4 = 0 | -1.395 | 0.16 | 0.26 |
| CR2 - TB1 = 0 | -3.633 | 0.00 | 0.00 |
| CR2 - TB5 = 0 | 0.9211 | 0.36 | 0.46 |
| CR2 - TB6 = 0 | -1.652 | 0.10 | 0.18 |
| CR2 - TB7 = 0 | -2.131 | 0.03 | 0.07 |
| CR2 - TB8 = 0 | -0.7527 | 0.45 | 0.53 |
| CR3 - CR4 = 0 | -2.574 | 0.01 | 0.03 |
| CR3 - TB4 = 0 | -3.387 | 0.00 | 0.00 |
| CR3 - TB1 = 0 | -4.108 | 0.00 | 0.00 |
| CR3 - TB5 = 0 | -1.414 | 0.16 | 0.26 |
| CR3 - TB6 = 0 | -3.026 | 0.00 | 0.01 |
| CR3 - TB7 = 0 | -3.693 | 0.00 | 0.00 |
| CR3 - TB8 = 0 | -2.671 | 0.01 | 0.02 |
| CR4 - TB4 = 0 | -0.2977 | 0.77 | 0.84 |
| CR4 - TB1 = 0 | -3.25 | 0.00 | 0.01 |
| CR4 - TB5 = 0 | 1.775 | 0.08 | 0.14 |
| CR4 - TB6 = 0 | -0.8198 | 0.41 | 0.50 |
| CR4 - TB7 = 0 | -1.15 | 0.25 | 0.36 |
| CR4 - TB8 = 0 | 0.2264 | 0.82 | 0.88 |
| TB4 - TB1 = 0 | -3.398 | 0.00 | 0.00 |
| TB4 - TB5 = 0 | 2.598 | 0.01 | 0.02 |
| TB4 - TB6 = 0 | -0.6942 | 0.49 | 0.56 |
| TB4 - TB7 = 0 | -1.213 | 0.23 | 0.34 |
| TB4 - TB8 = 0 | 0.6297 | 0.53 | 0.60 |
| TB1 - TB5 = 0 | 3.926 | 0.00 | 0.00 |
| TB1 - TB6 = 0 | 2.76 | 0.01 | 0.02 |
| TB1 - TB7 = 0 | 2.946 | 0.00 | 0.01 |
| TB1 - TB8 = 0 | 3.411 | 0.00 | 0.00 |
| TB5 - TB6 = 0 | -2.419 | 0.02 | 0.04 |
| TB5 - TB7 = 0 | -3.151 | 0.00 | 0.01 |
| TB5 - TB8 = 0 | -1.772 | 0.08 | 0.14 |
| TB6 - TB7 = 0 | -0.1789 | 0.86 | 0.90 |
| TB6 - TB8 = 0 | 1.081 | 0.28 | 0.39 |
| TB7 - TB8 = 0 | 1.555 | 0.12 | 0.21 |