



REVIEW OF ACTIVITIES 2023

Cultured Mussel Growers Association AGM
March 20th, 2024

- 1. Mussel Monitoring Program**
- 2. Climate Data**
- 3. Water Quality**
- 4. Mortality Investigations**
- 5. Invasive Species Monitoring**

A photograph of two researchers on a white motorboat on a body of water. The researcher on the left is wearing a green jacket and a blue cap, leaning over the side of the boat. The researcher on the right is wearing an orange jumpsuit and a blue cap, leaning over a black equipment case. The boat has a black railing and a black outboard motor. The text 'Mussel Monitoring' is overlaid in white on the left side of the image. A list of monitoring parameters is overlaid on the right side of the image.

Mussel Monitoring

- Spat-fall prediction
- Meat yield
- Water temperature
- Potentially toxic phytoplankton
- Tunicate larvae
- Predators & fouling organisms

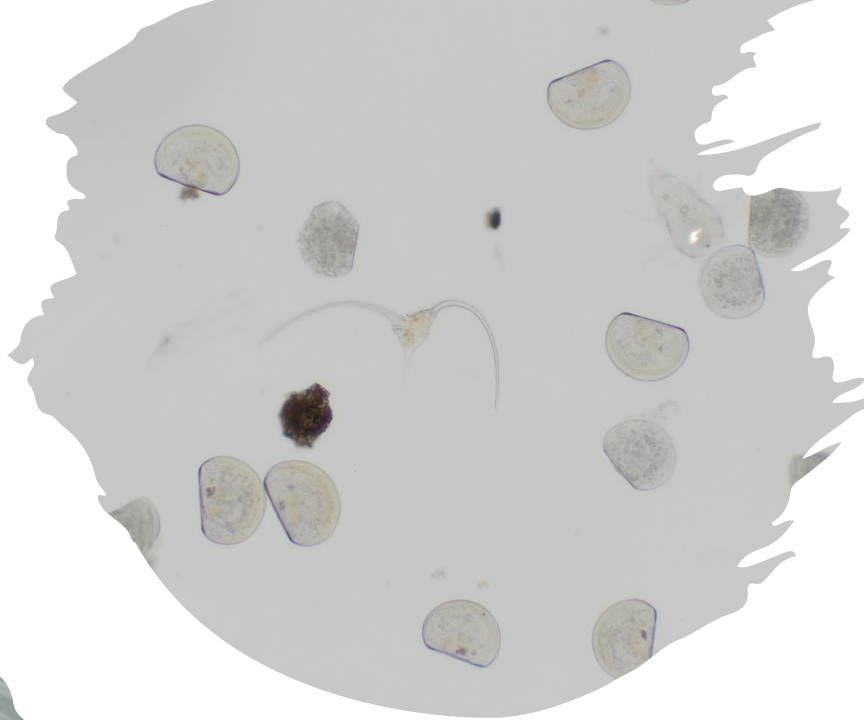
C24761PE

Monitoring Sites

20 Sample Collection Sites

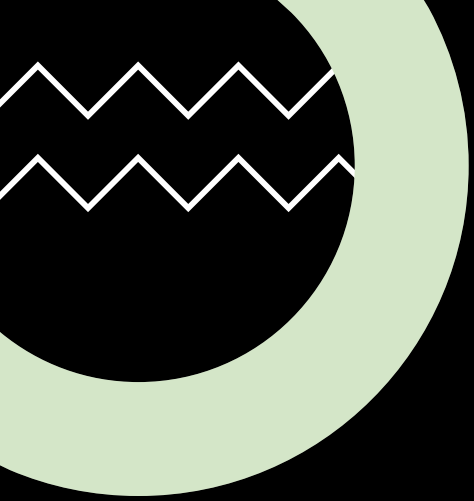
- 16 (13) monitored from May to December
- 4 additional sites added in May/June for larval monitoring





Spatfall Prediction

- 3 min pump sample (150L/min)
- Larval concentration and size range

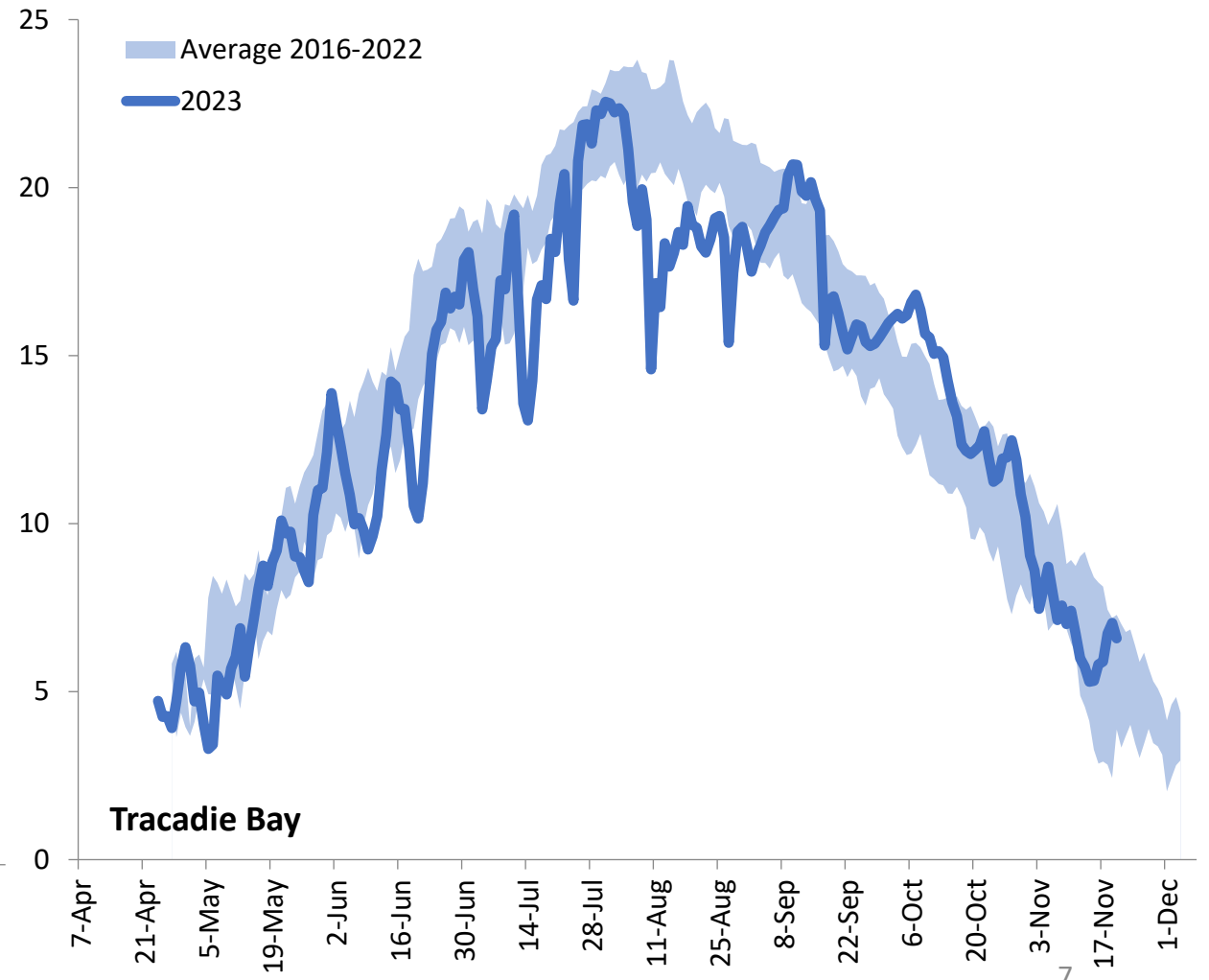
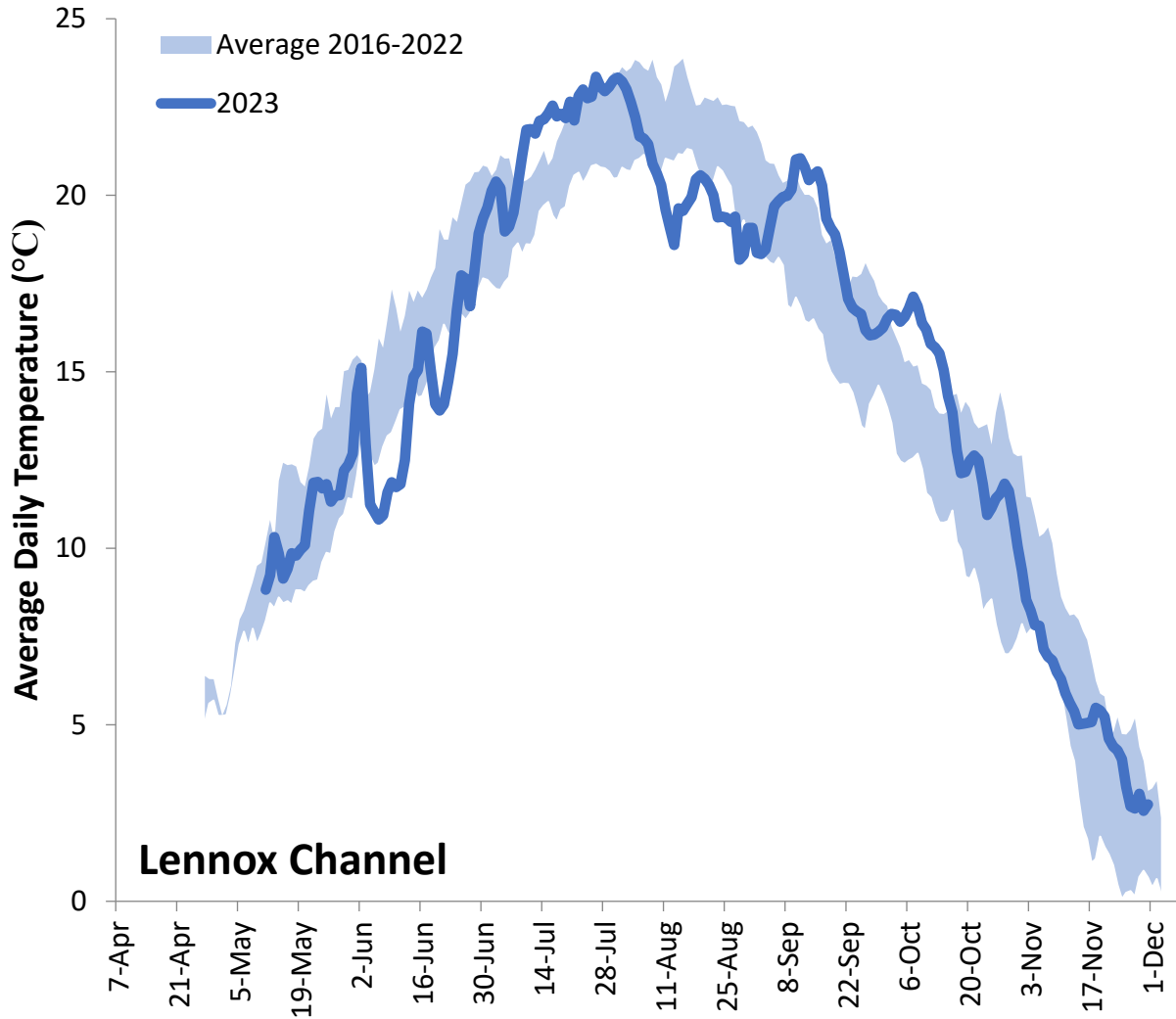


Water Temperature

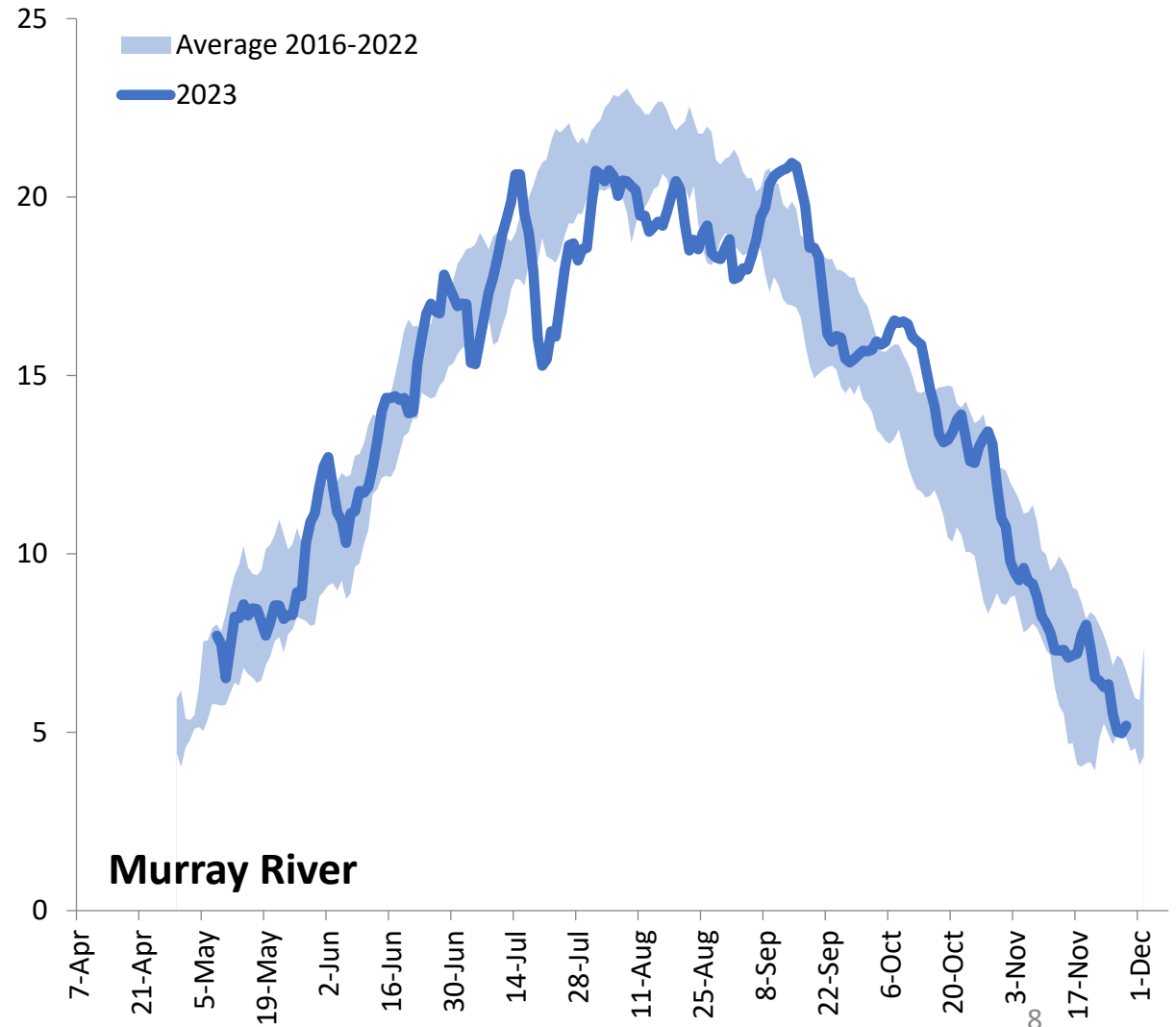
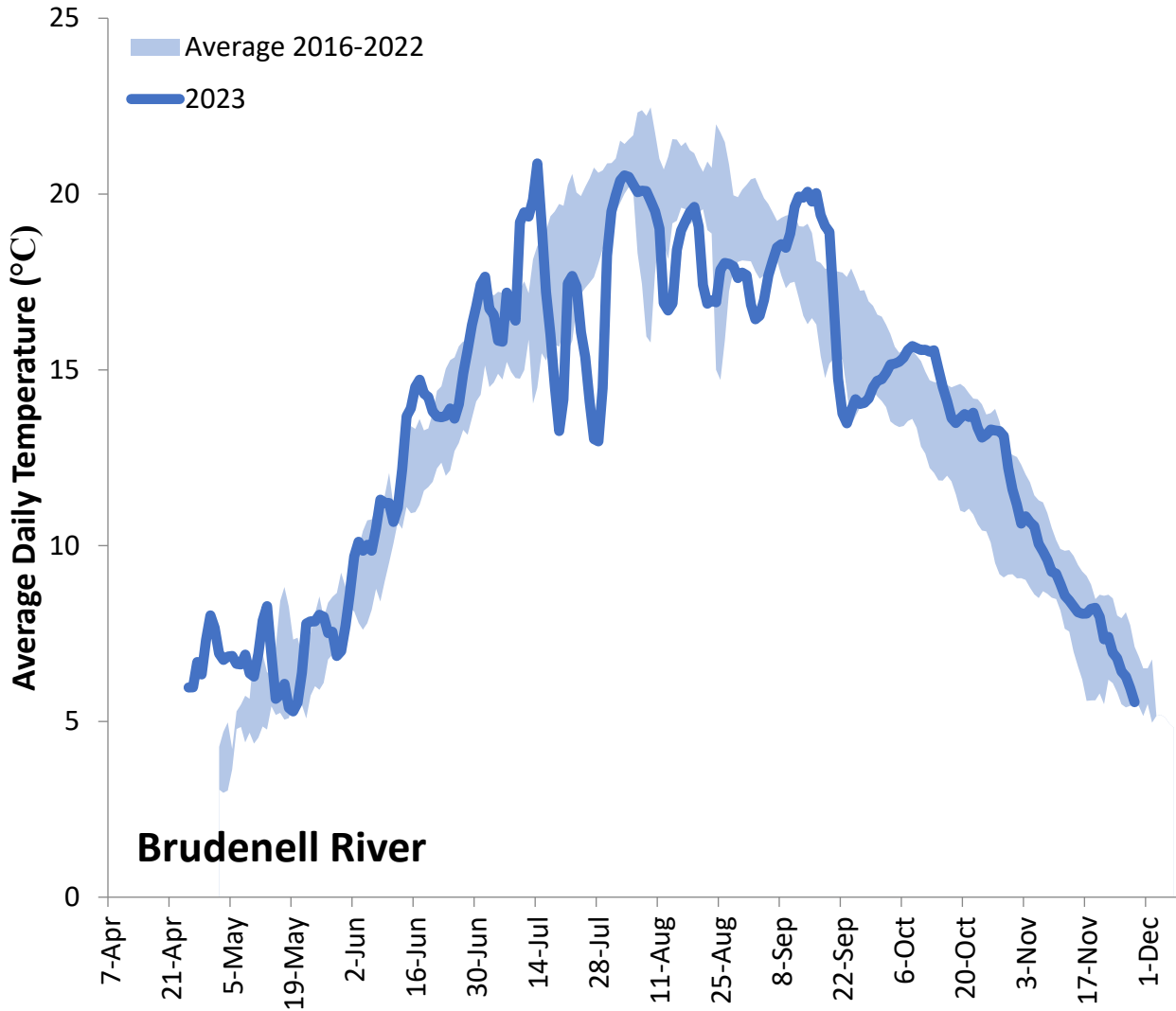
- HOBO Tidbit MX2203
- Data collected hourly
- Data uploaded to webpage on a weekly basis
- Current temperatures versus historical on website



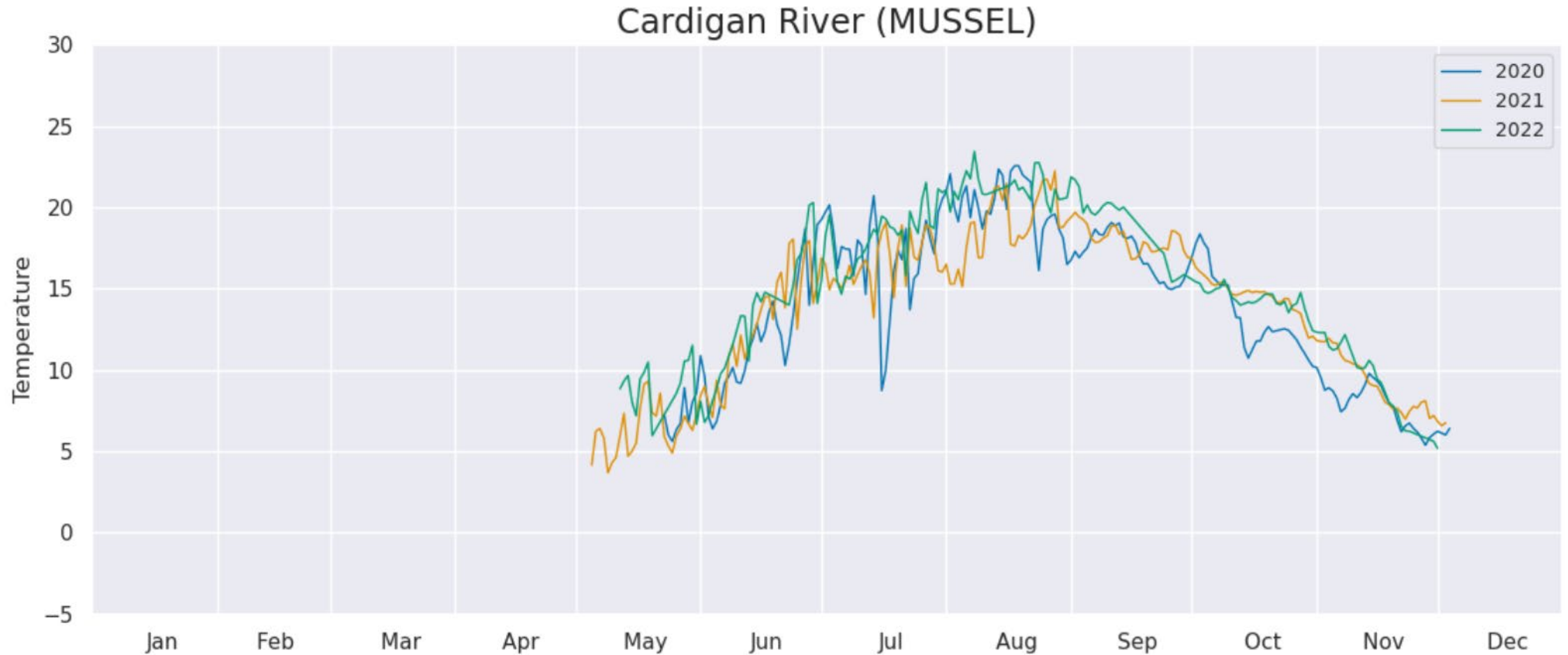
Water Temperature North Shore Examples



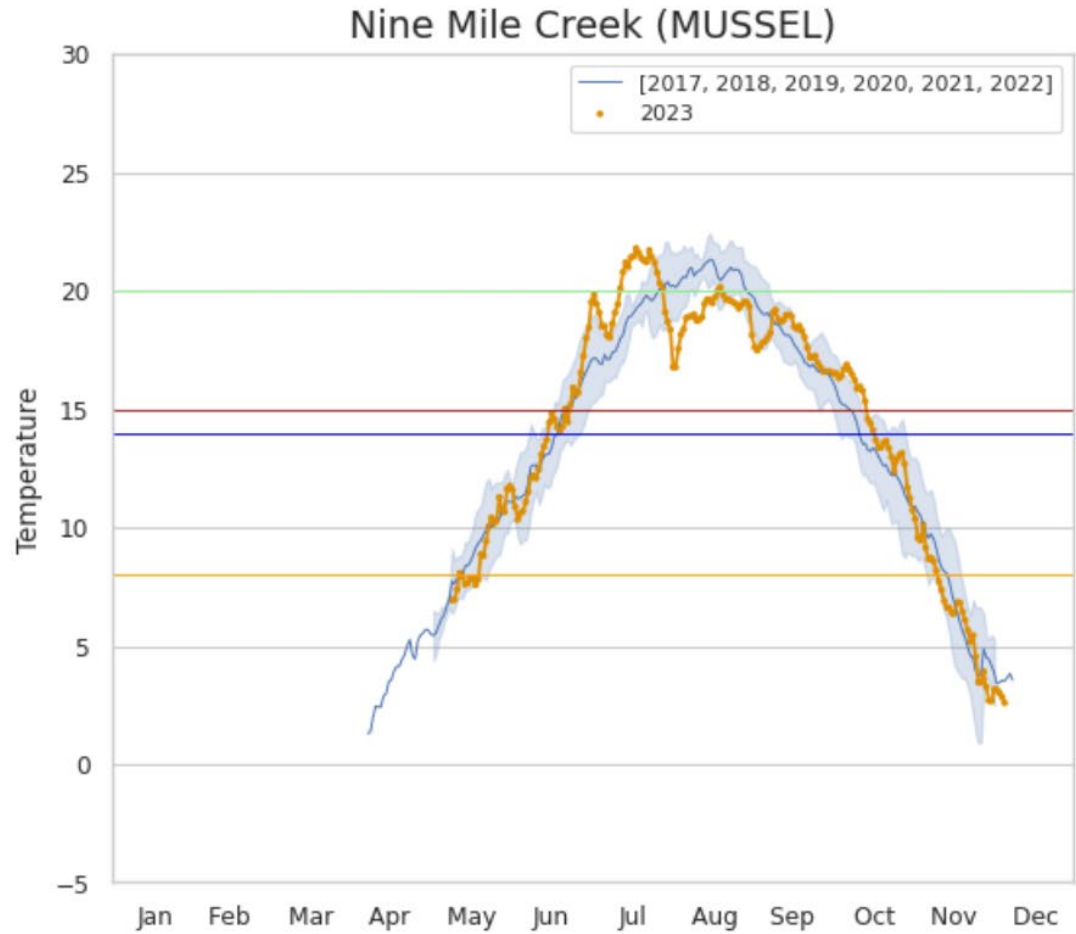
Water Temperature Eastern Examples



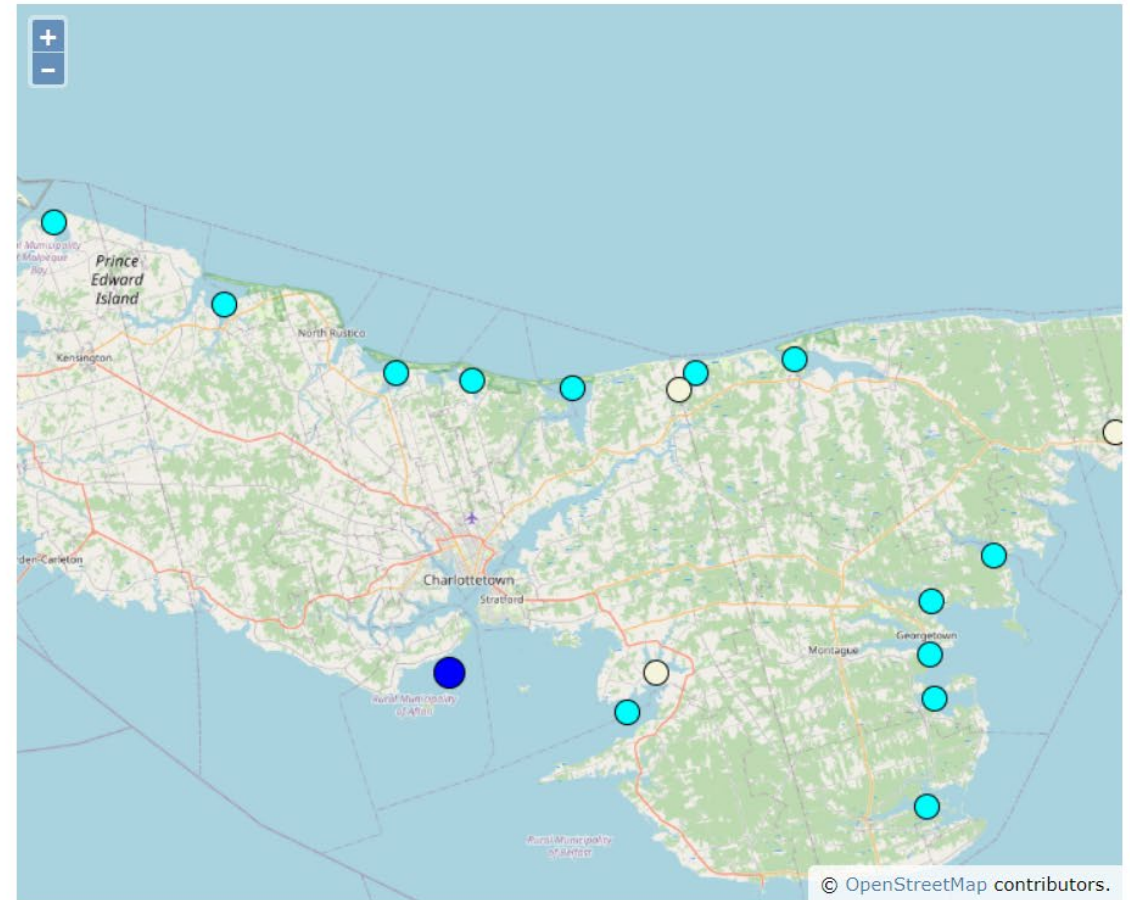
Water Temperature [Website \(Old Version\)](#)



Water Temperature [Website \(Updated\)](#)

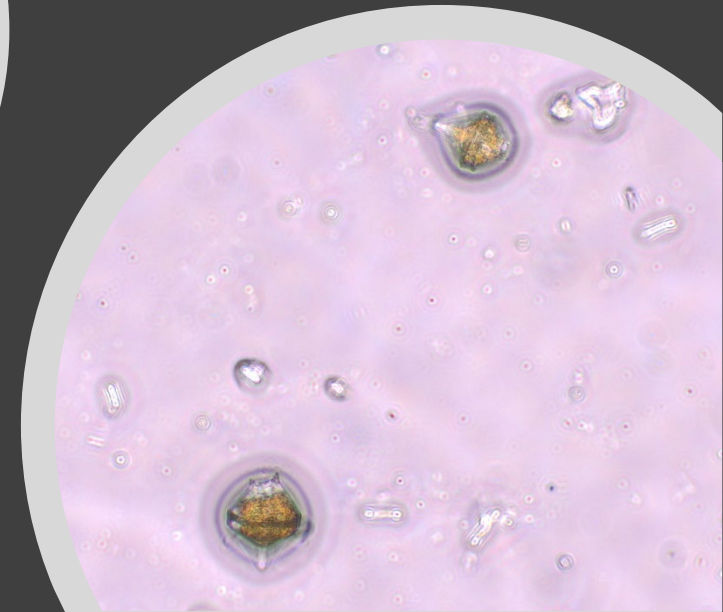
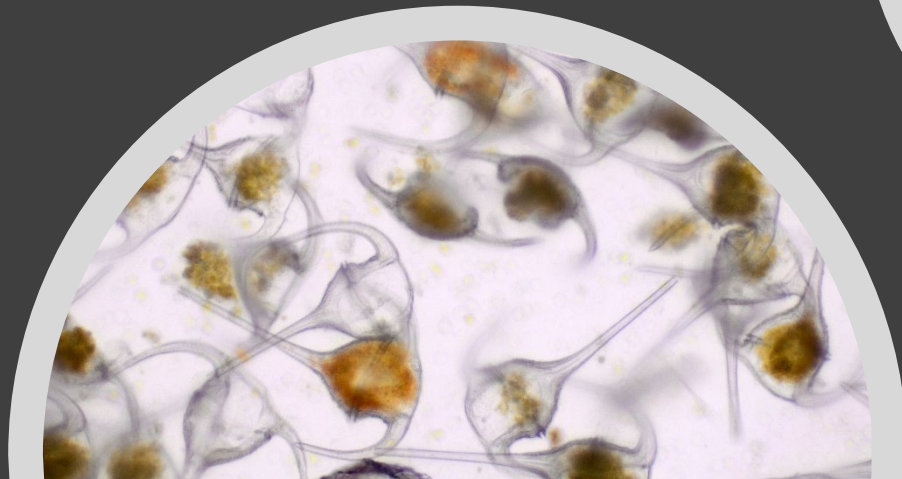
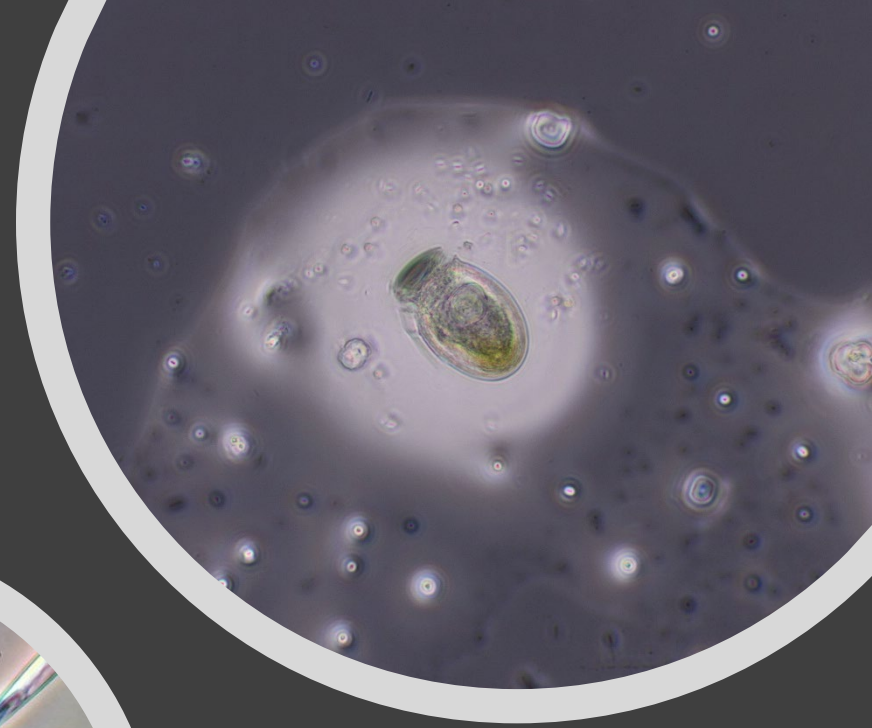


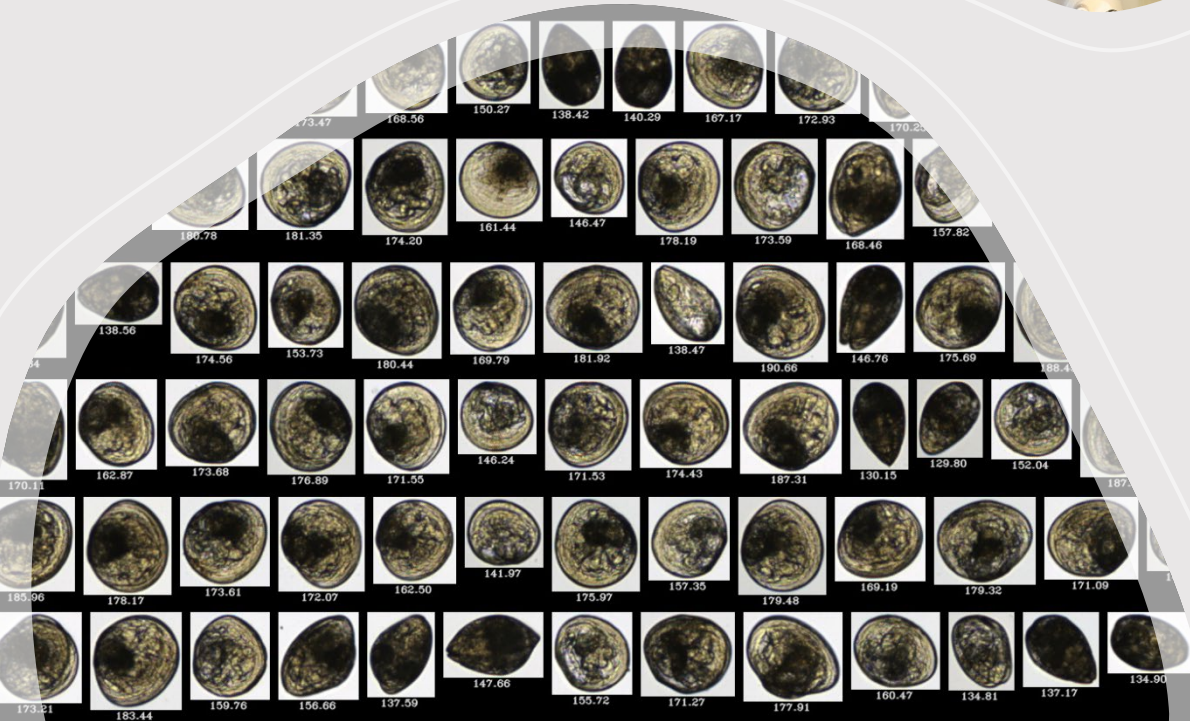
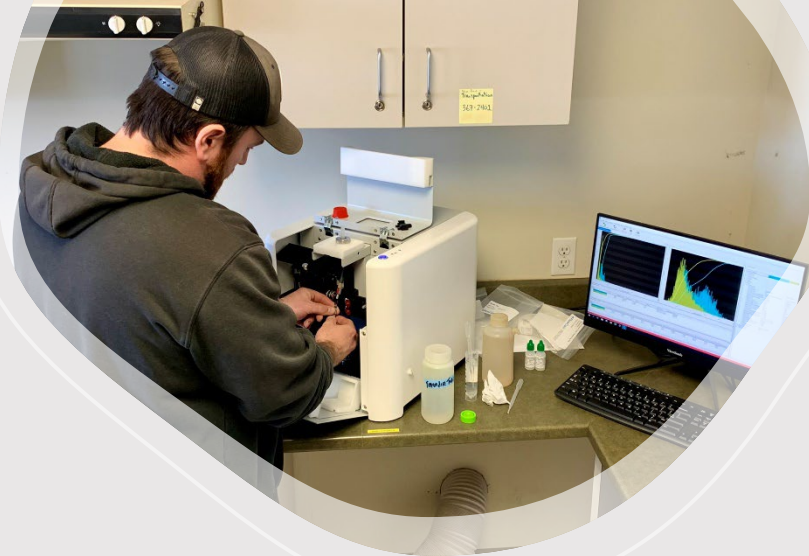
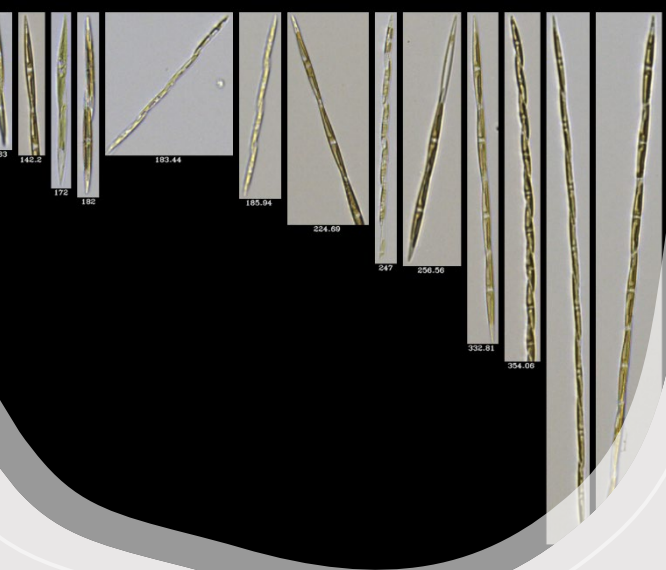
- Vase Tunicate (8°C)
- Mussel spawning (14°C)
- Clubbed Tunicate (15°C)
- Oyster spawning (20°C)



Potentially Toxic Phytoplankton

- 500 mL subsample collected from 5 “tube” samples of the entire water column
- Quantify plankton of concern (i.e. pseudonitzschia)
- Early warning system for biotoxins in mussels

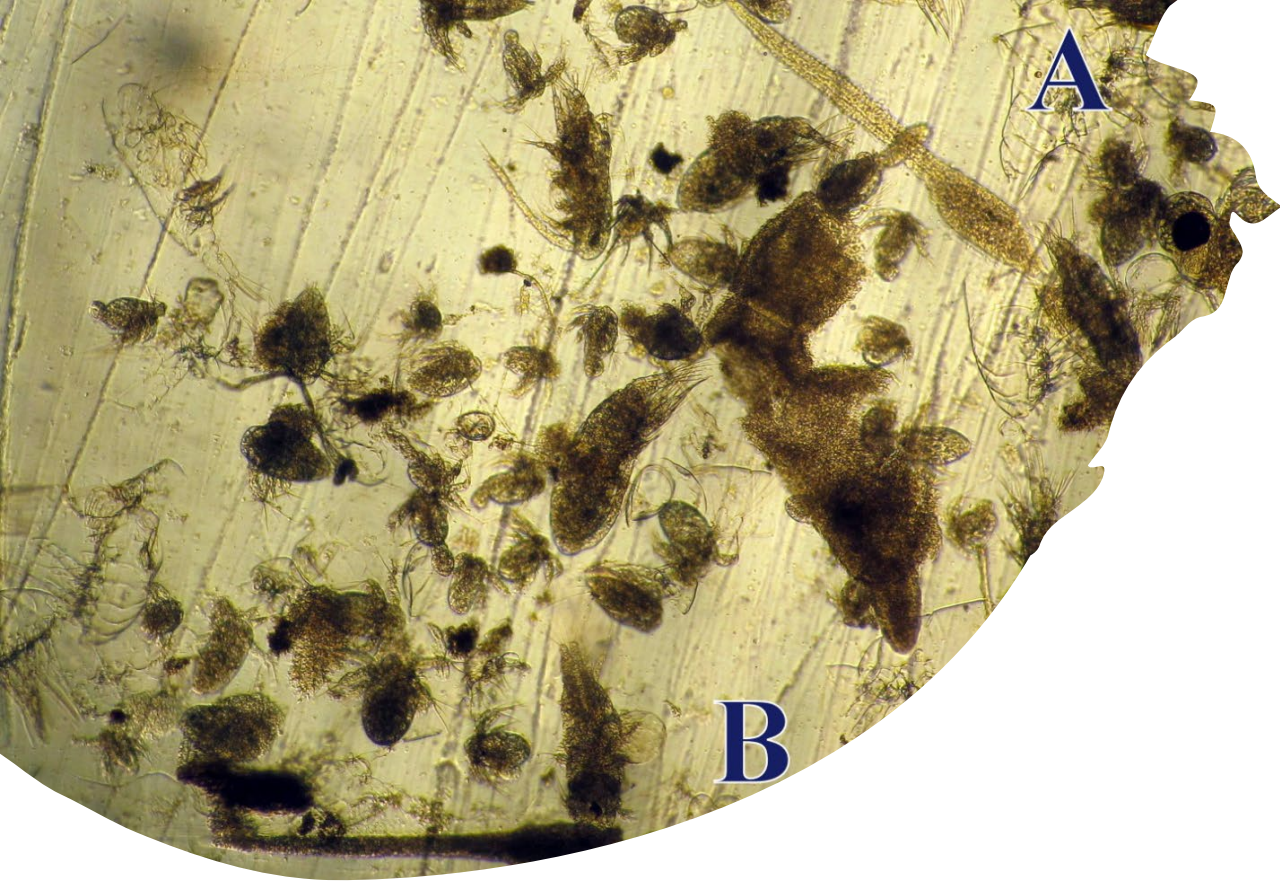




n: Diameter (ABD)

New Tech FlowCam

- Collaboration with DFOs Marine Spatial Planning & Marine Environmental Quality group
- Enhancement to current monitoring; algae species (potentially toxic?), shellfish larvae



Tunicate Larvae

- 3 min pump sample (50L/min)
- Entire samples is read under microscope
- Species and abundance recorded



Meat Yield and Shell Growth

Purpose?

Indicator of performance & productivity

Procedure?

Stock cage in spring (seed from previous year)

30 mussels sampled weekly

Steamed for 5 minutes

Data Collected?

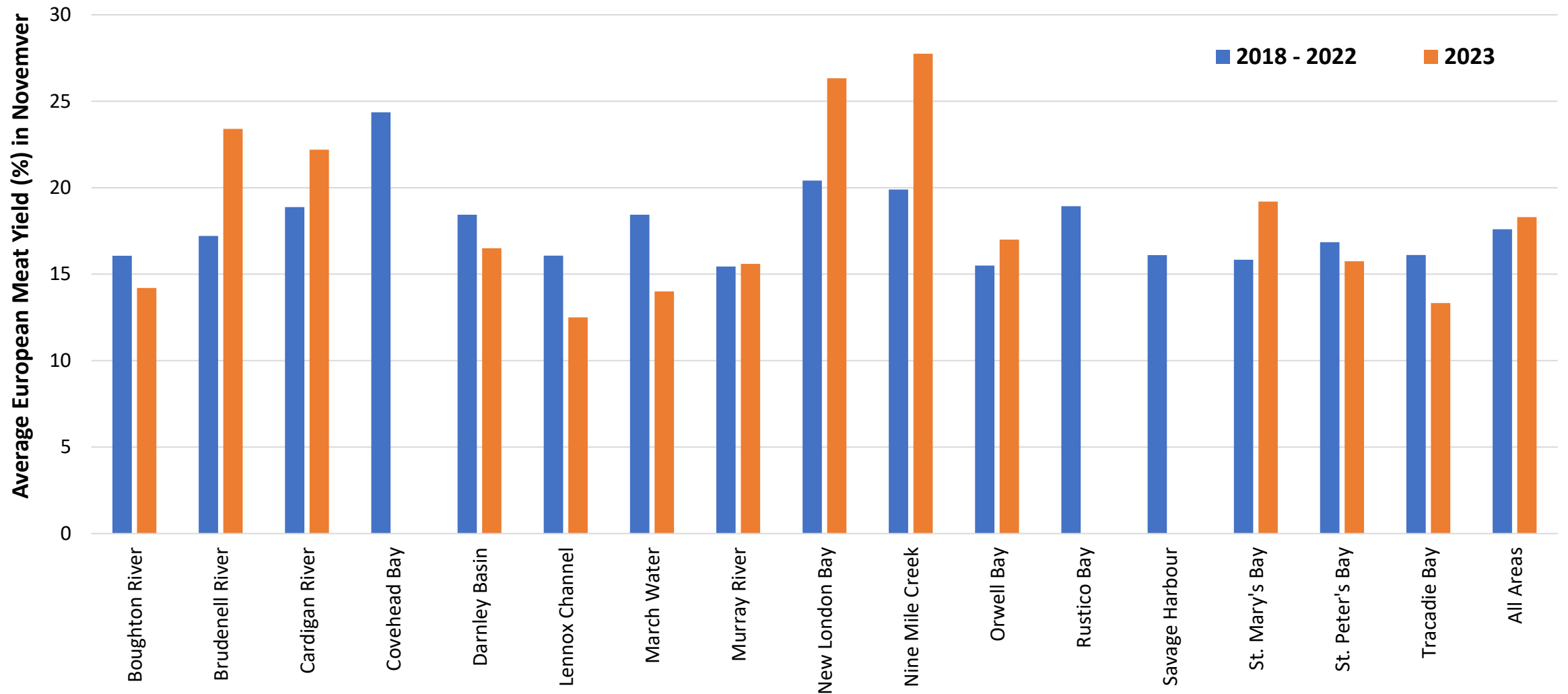
Canadian & European Yields

Average shell length

Average meat weight

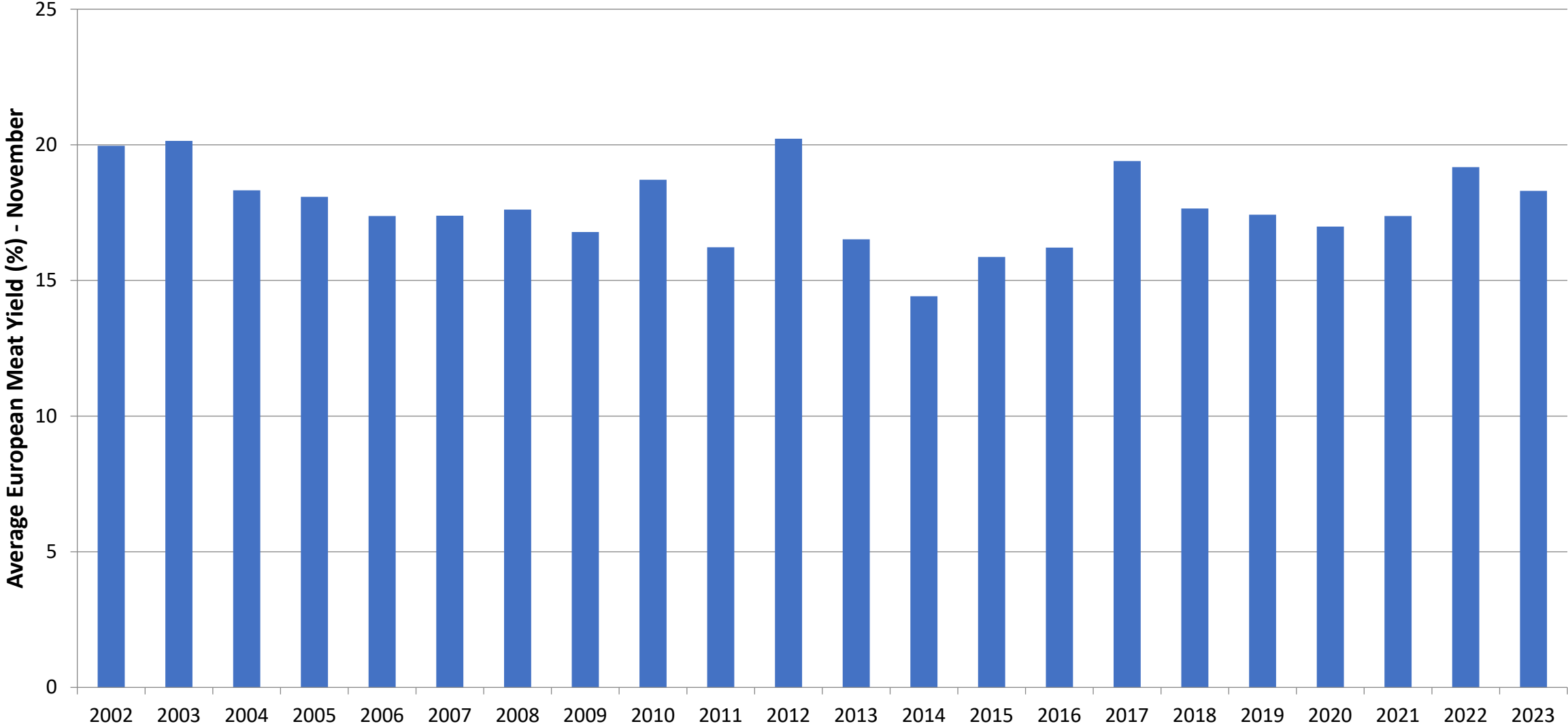


MMP November Meat Yields 2023



MMP

November Meat Yields *2002 – 2023*



MMP Website

Online Services

View Mussel Monitoring Results

The Mussel Monitoring Program (MMP) is a service provided to cultured mussel growers and processors by the Department of Fisheries and Communities. Weekly data is collected during the ice-free season to provide the mussel industry with a variety of information to assist them in the management of their operations. The information collected includes: mussel spatfall prediction, mussel meat yield analysis, water temperature evaluation, the detection and estimation of the numbers of potentially toxic algae species, and the monitoring of predators and fouling organisms.

View most recent water temperatures at [Mussel Monitoring Water Temperatures](#).

View most recent mussel monitoring results by selecting current year below.

Year *

Year ▾

Submit



How did we do? Give us your feedback on this service

For more information contact:

Gary Smith

Phone: 902-368-5268

Email: gbsmith@gov.pe.ca

Year *

2021 ▾

Submit

Showing results 1-20 of 20

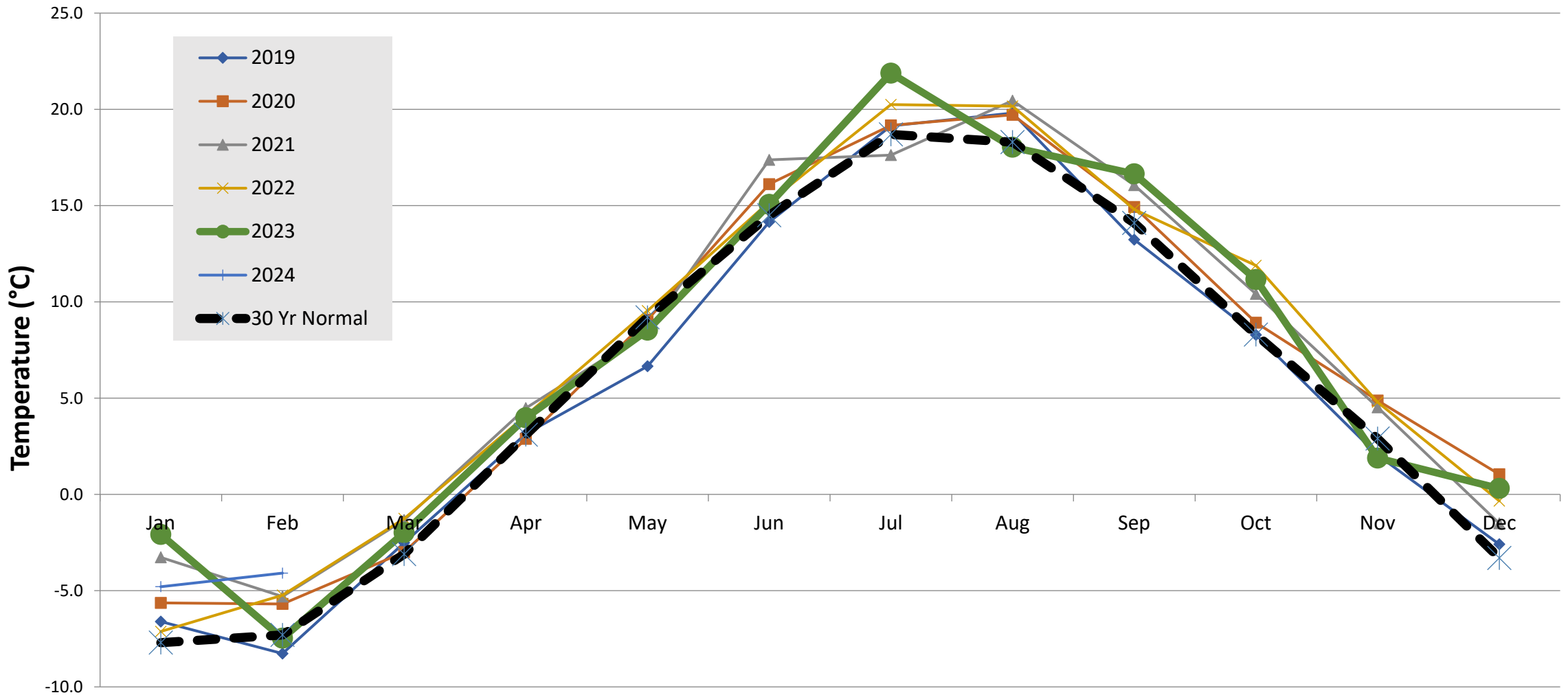
Area	Locations
1	Brudenell River
1	Murray River
1	St. Marys Bay
2	Boughton River
2	Cardigan River
3	St. Peters Bay
4	Savage Harbour
4	Tracadie Bay
4	Winter Bay
5	Covehead Bay
5	Rustico Bay
6	New London Bay

MMP Website

Area 1: Brudenell River

Date Collected	Water Temp. (°C)	Larvae Conc.	Size Range (µm)	Set Size (%)	Ciona (#/150L)	Styela (#/150L)	Pseudo nitzschia (cells/L)	CDN Meat (%)	EU Meat (%)	Avg. Wt (g)	Avg. Length (mm)	Comment
2021-12-01	6.1						400	27	14	2.7	57.3	
2021-11-25	7.3	0					0	32	18	4.8	62.9	
2021-11-18	8.0	0					0	27	14	2.8	57.0	
2021-11-08	10.3	0			2		0	30	16	3.7	60.0	
2021-11-03	11.6	0					0	32	18	2.5	50.4	
2021-10-26	12.4	0			2		0	31	18	2.2	50.5	
2021-10-20	14.0	Low	310	100	2		900	30	16	1.9	47.8	
2021-10-20	14.0	Low	310	100	2		900					
2021-10-14	14.7	0			4		1500	32	18	2.3	48.0	
2021-10-07	15.2	0			6		3000	29	16	1.8	46.2	
2021-09-28	17.6	0			8	4	1900	32	17	2.1	47.3	

Air Temperature Ch'town



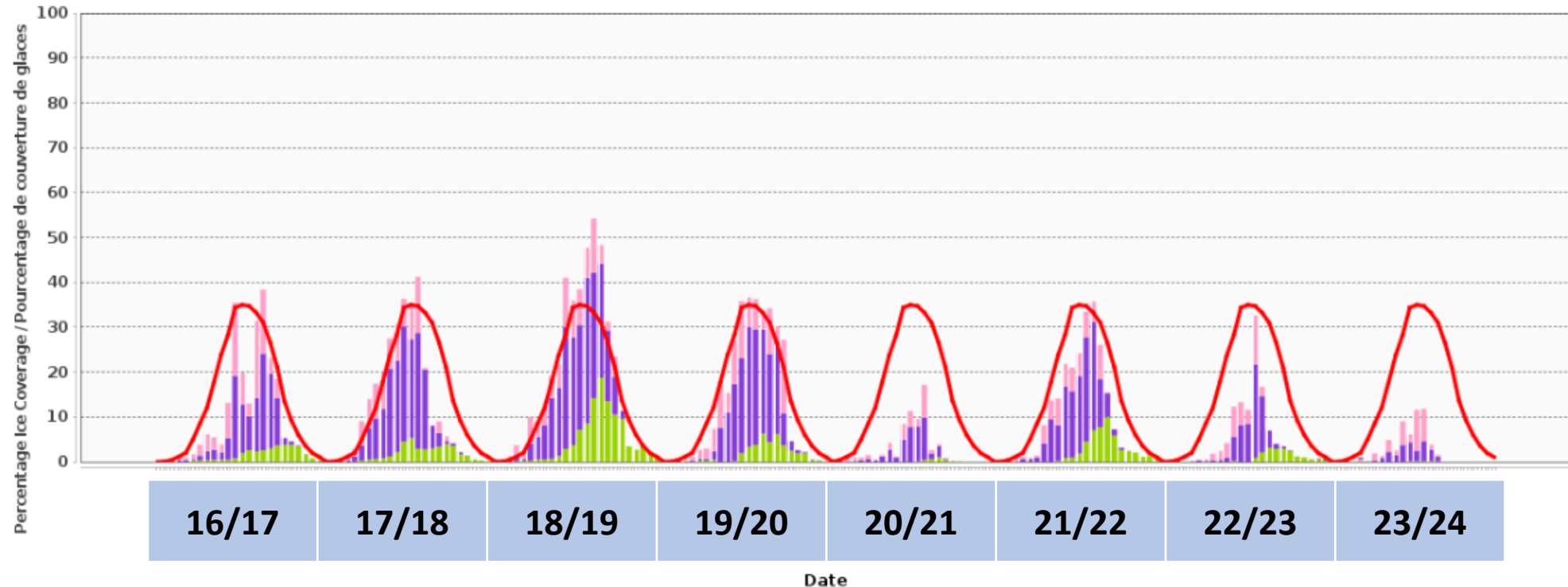


Multiple Seasons: Weekly Ice Coverage by Stage of Development for the seasons 2016/17 to 2023/24, Weeks: 1126-0507

Plusieurs saisons: Couverture des glaces hebdomadaire par stade de formation pour les saisons 2016/17 à 2023/24, Semaines: 1126-0507

CIS EC Gulf of St. Lawrence /
CIS EC Golfe du Saint-Laurent

Area / Aire : 477,202 km²



No significant interpolated data / Pas d'interpolation significative
Canadian Ice Service - Environment Canada / Service canadien des glaces - Environnement Canada
(2024-03-15 15:14 IceGraph - Canadian Ice Service/Grphe des glaces - Service canadien des glaces 2.0.7 2014/01/21)

■ Old Ice / vieille glace ■ First-Year Ice / glace de première année ■ Young Ice / jeune glace ■ New Ice / nouvelle glace ■ Interpolated Data / Interpolée ■ No Data / Aucune donnée
— Average / moyenne 1990/91-2019/20

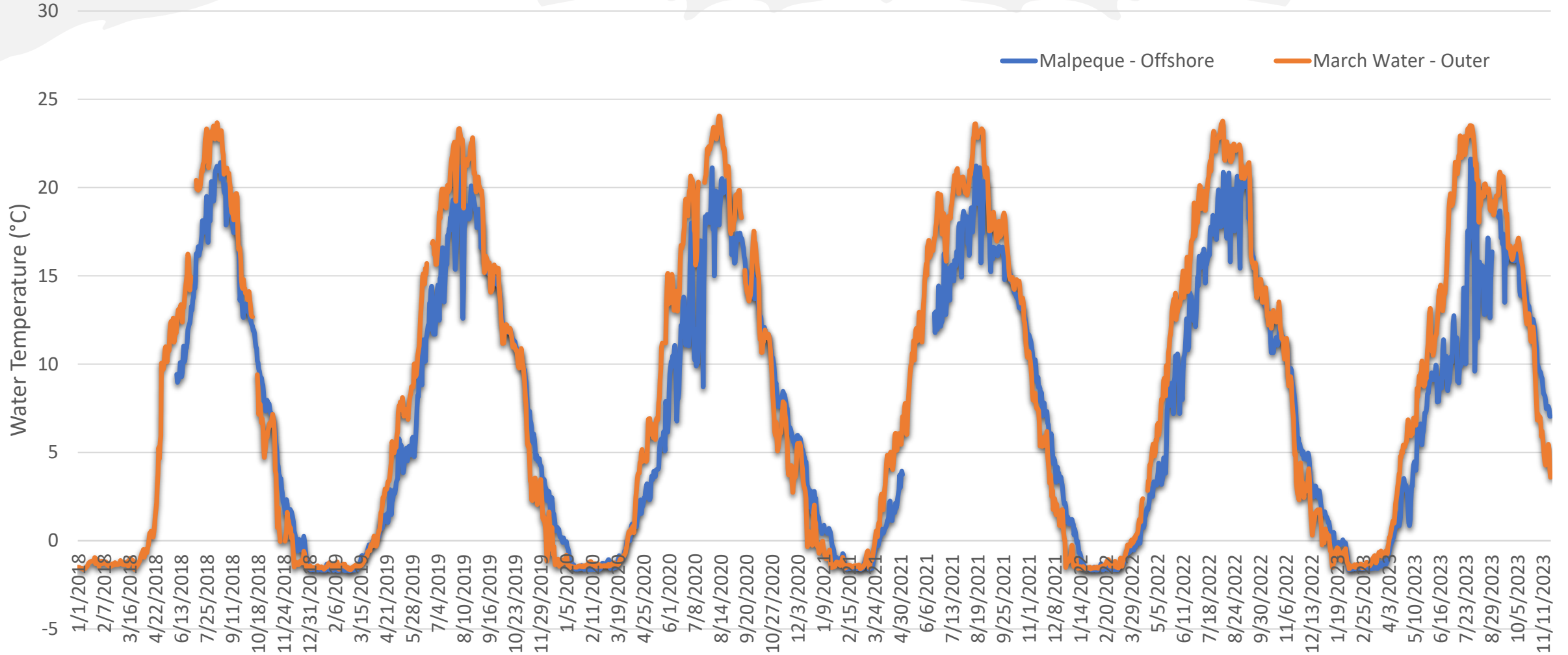
Water Quality Deployment Sites



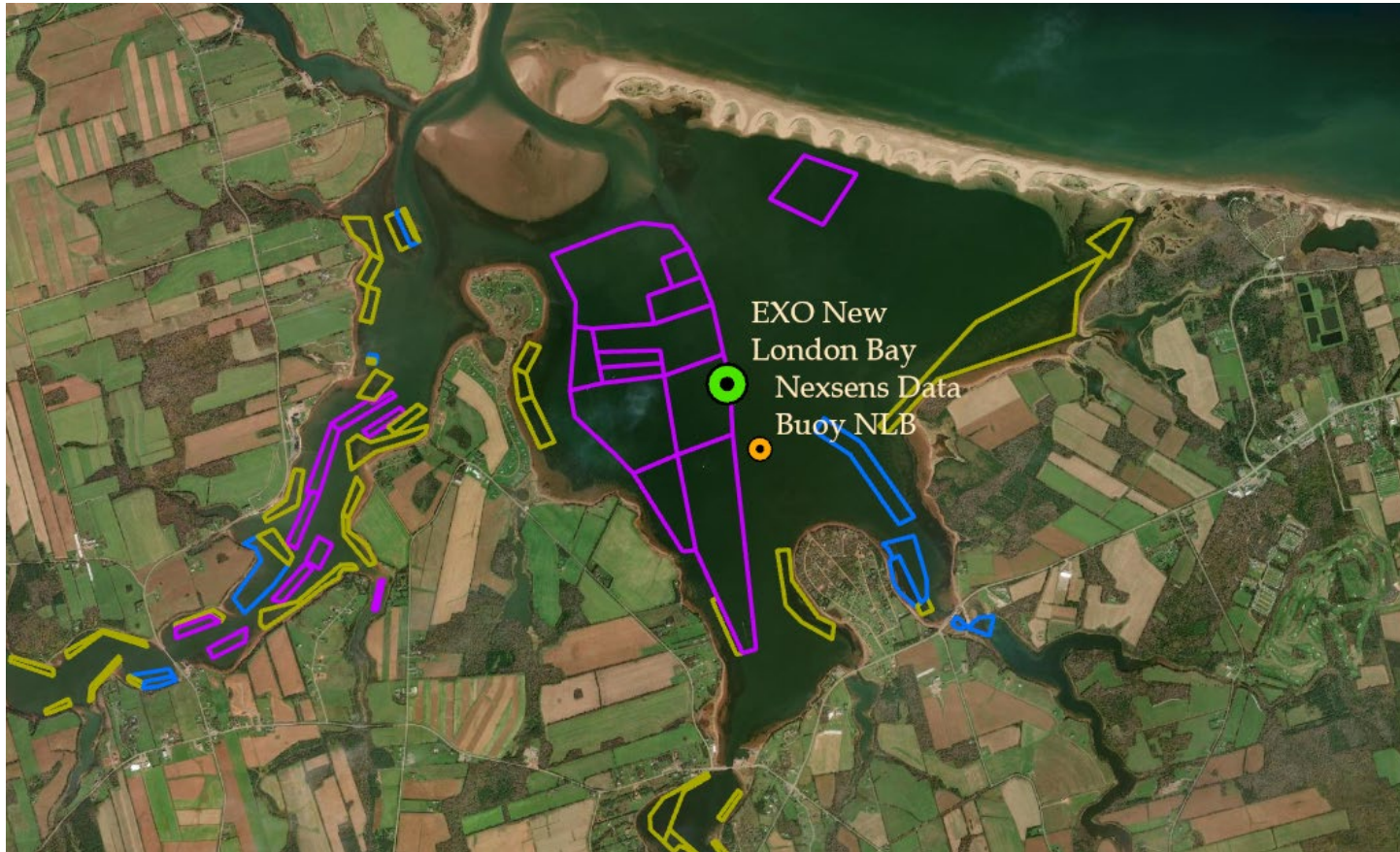
Water Quality Deployment Sites



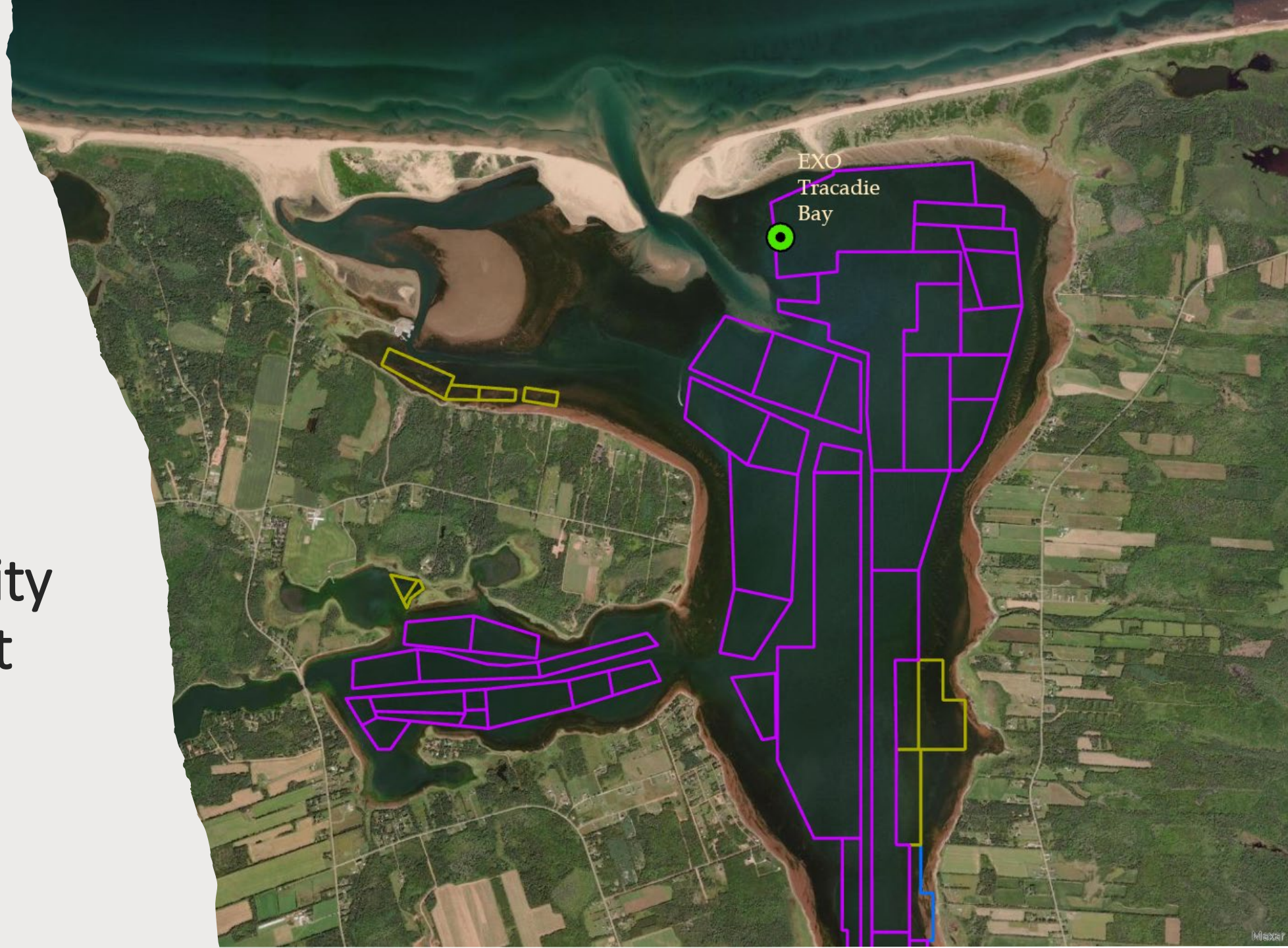
Water Quality Spatial Comparison *Temperature*



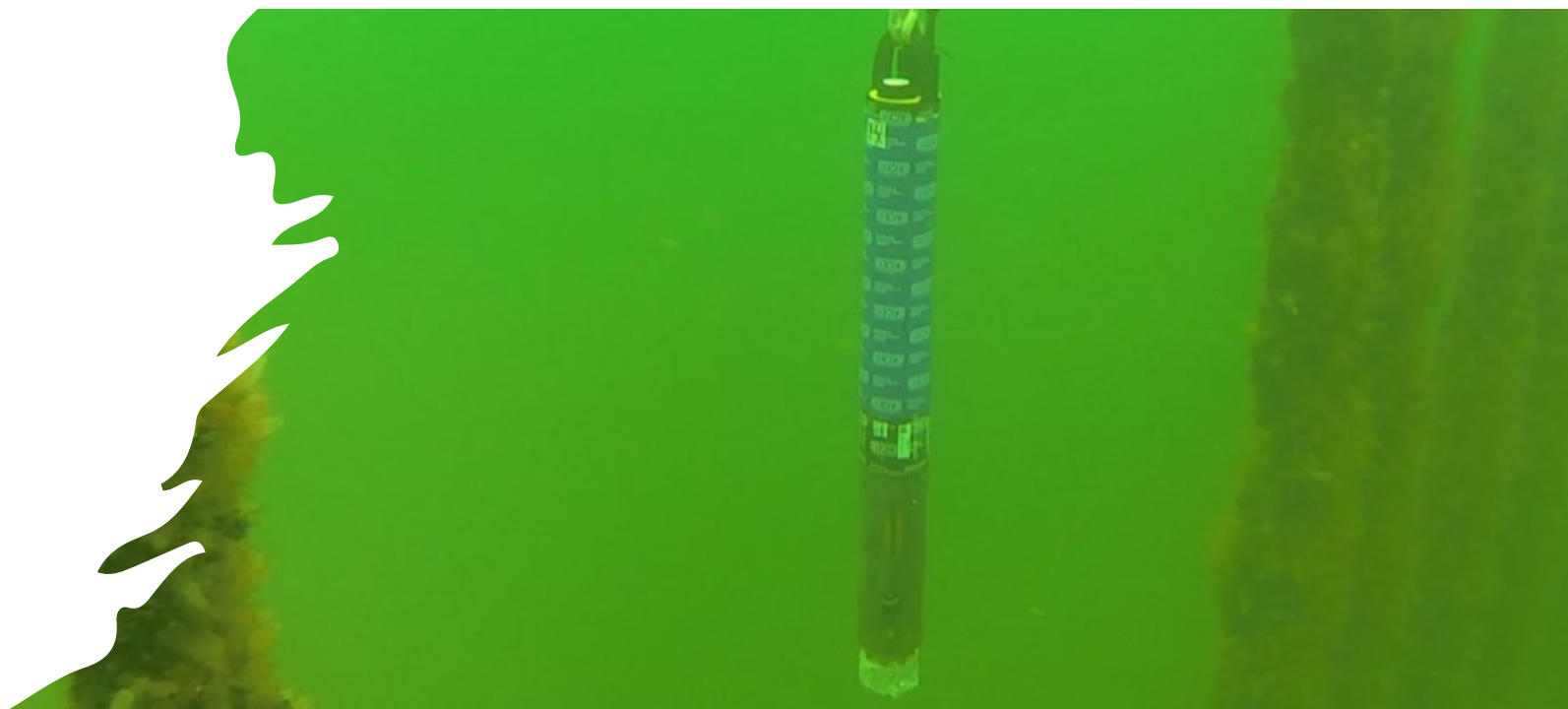
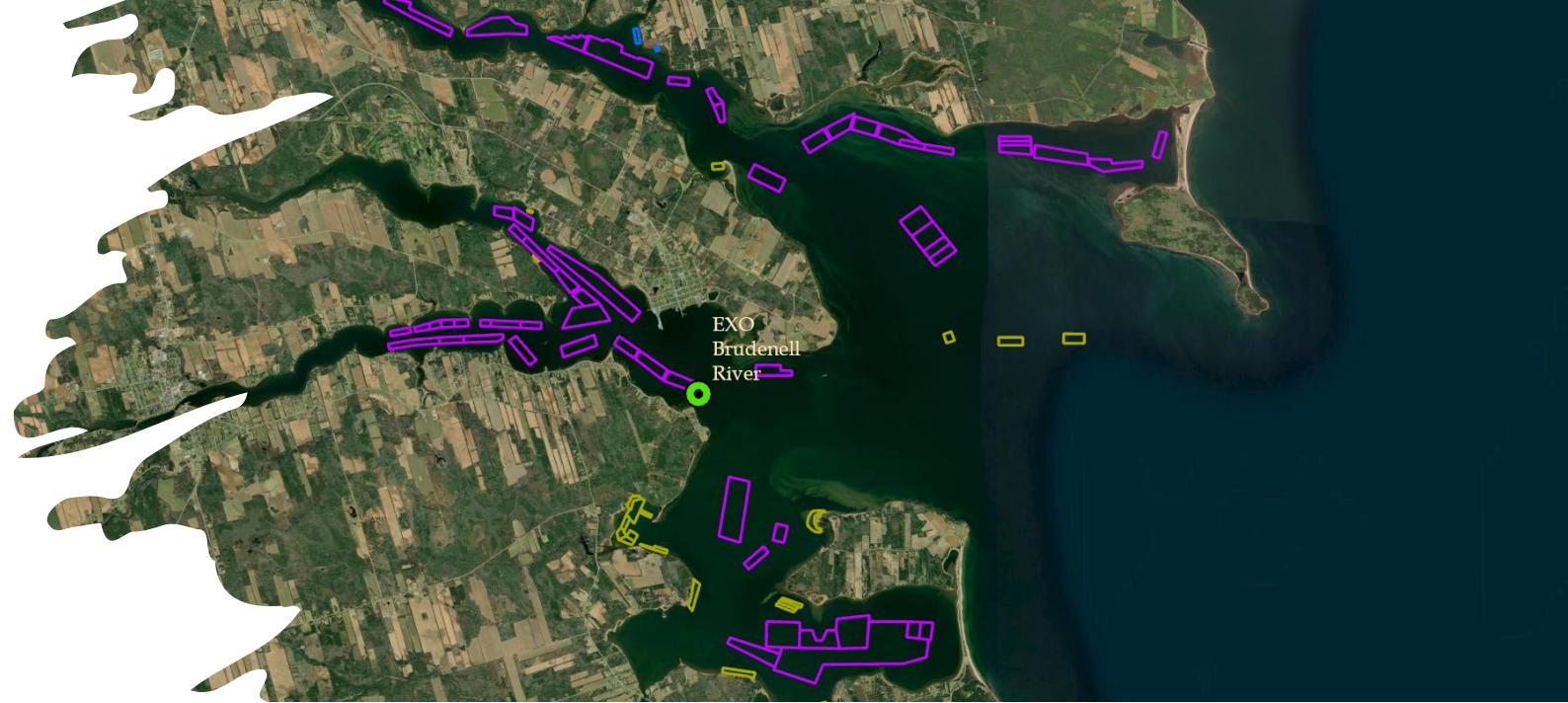
Water Quality Deployment Sites



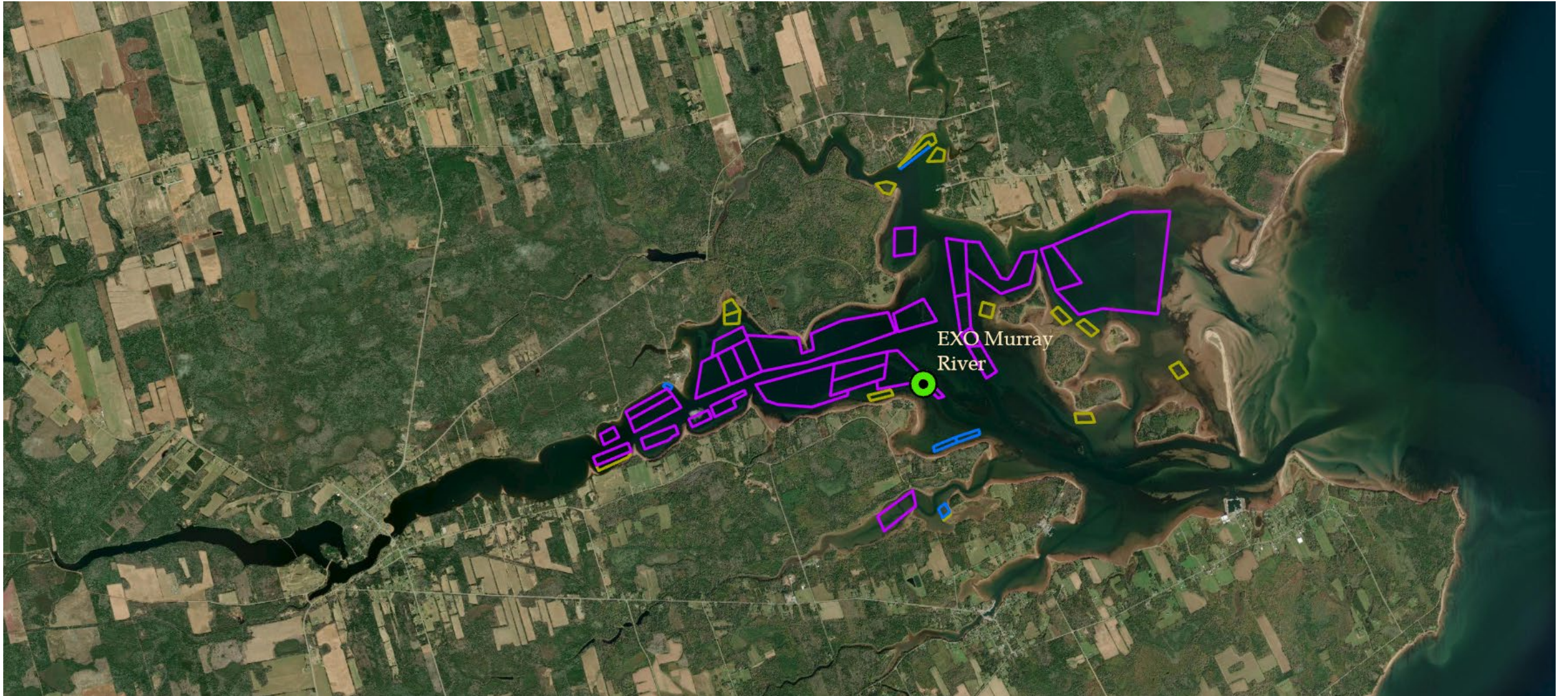
Water Quality Deployment Sites



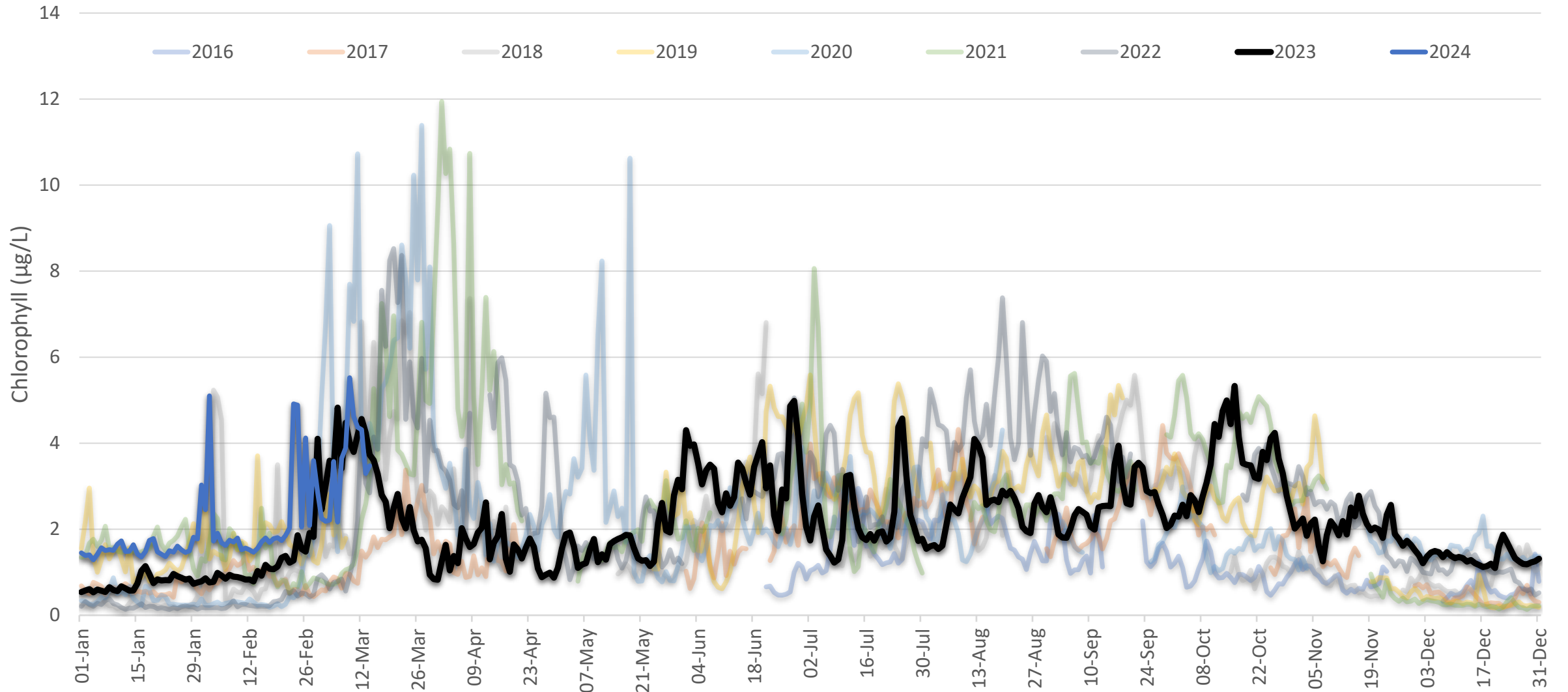
Water Quality Deployment Sites



Water Quality Deployment Sites



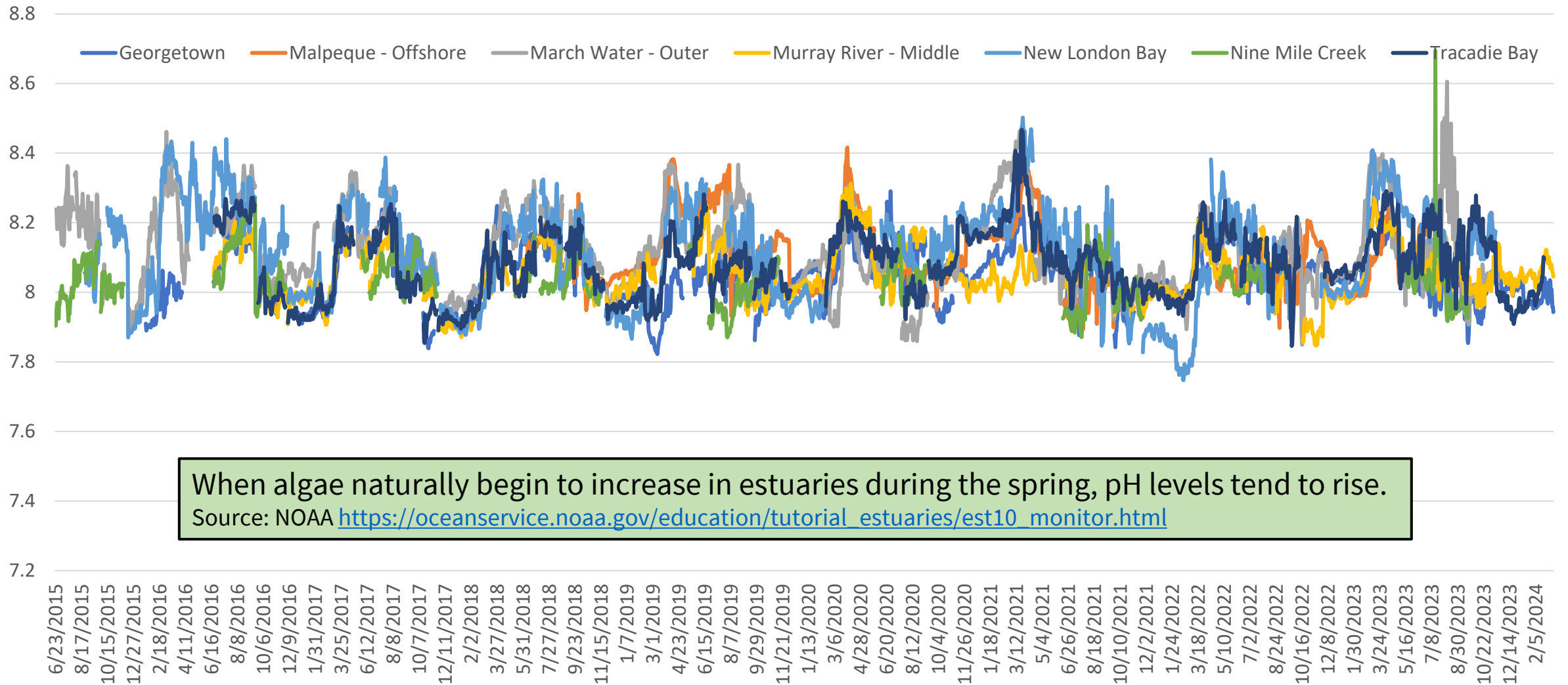
Water Quality Murray River *Chlorophyll*



Water Quality Deployment Sites



Water Quality pH 2015-2024



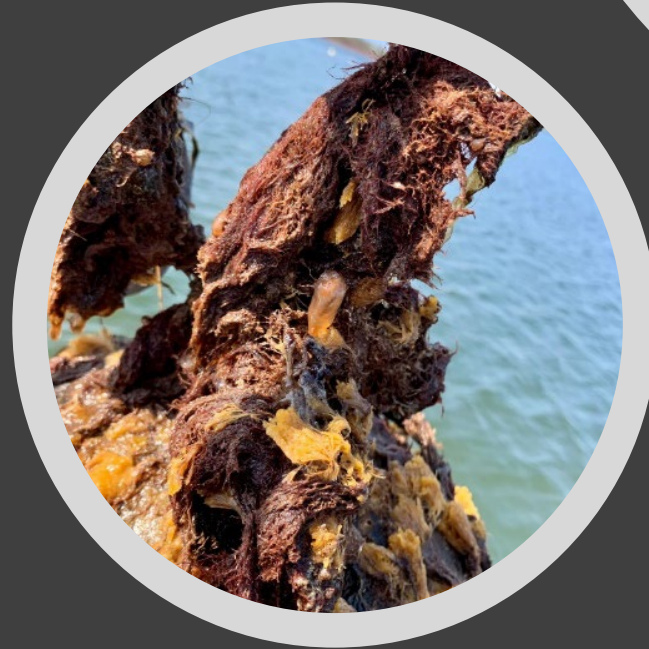
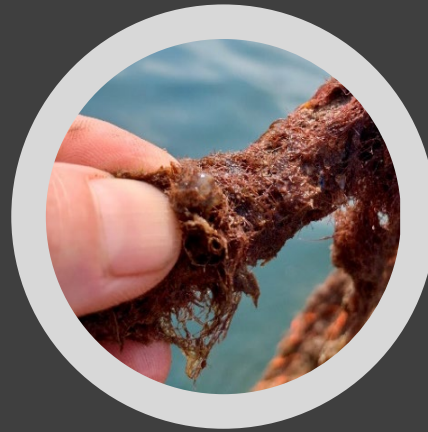
Mortality Investigations

- Assess and document the event
- Collect samples, as necessary
 - Consult provincial vet
 - Consult AVC Diagnostic Services
- Rule out disease/pest concerns
- Determine if isolated event or widespread
- Check water quality
- Typically, determined to be combination of water quality and husbandry



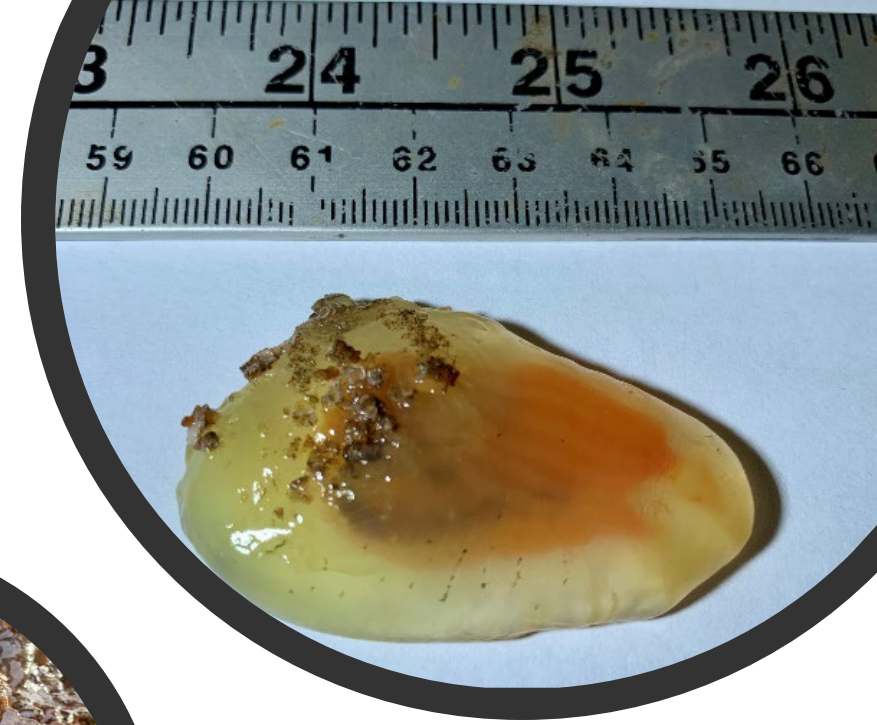
Invasive Species Monitoring 2023

- Savage Harbour - Confirmed July 13
- Rustico Bay - Confirmed June 23
- Tracadie Bay - Confirmed July 21
- Covehead Bay - Confirmed August 2



Invasive Species Monitoring 2023

- Alberton
 - Confirmed October 20, 2021
 - Re-confirmed in 2022 & 2023; however, not detected outside the harbour area
- New London Bay – Confirmed December 13th
- Lennox Channel – Reported December 27 (and confirmed as *Ciona*); follow-up survey to be completed spring 2024



SUMMARY

- Mussel Monitoring

- Spatfall issues in some areas.
- In general, meat yields consistent with previous few years
- Lowest average meat yields in 2014

- Climate

- Warm July / Cool August in 2023
- Lack of sea ice

- Water Quality

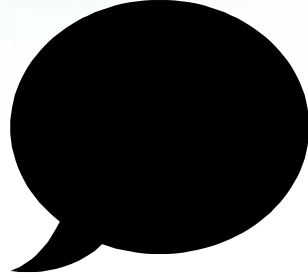
- Continue to collect data for long term trending
- New Tech - FlowCam

- Mortality Investigation

- Let us know if you are having any issues

- Invasive Species Monitoring

- Several new *Ciona* detections

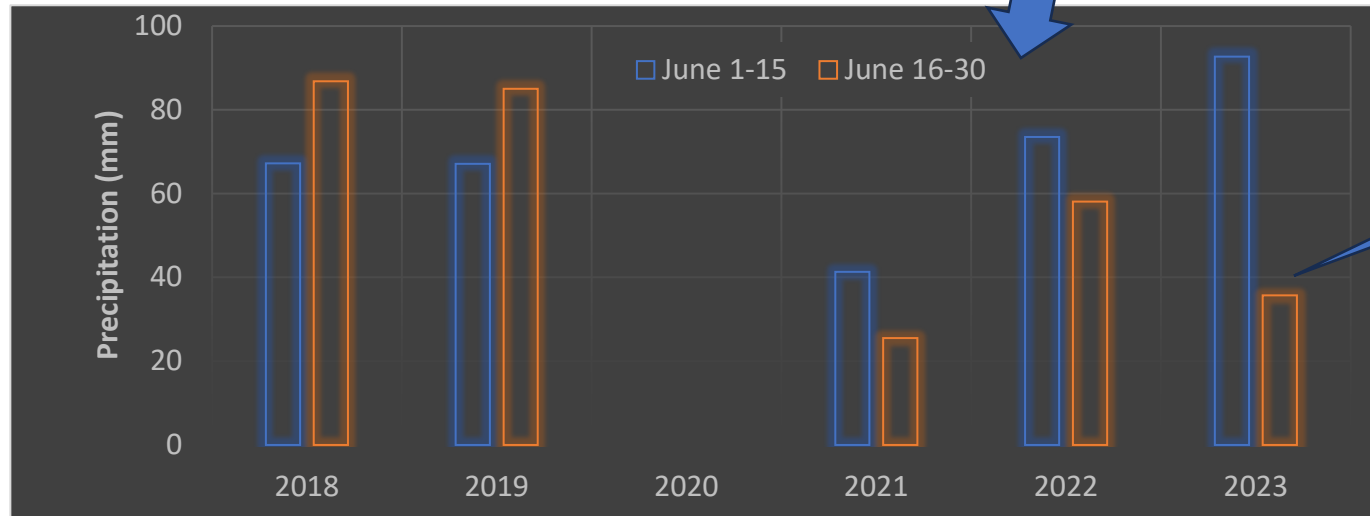
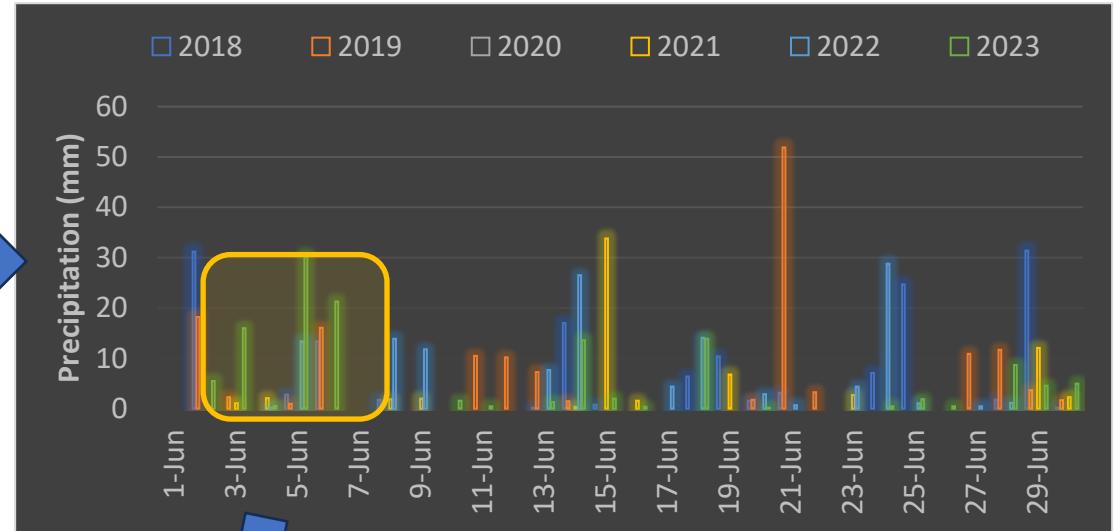
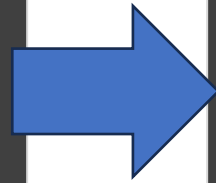
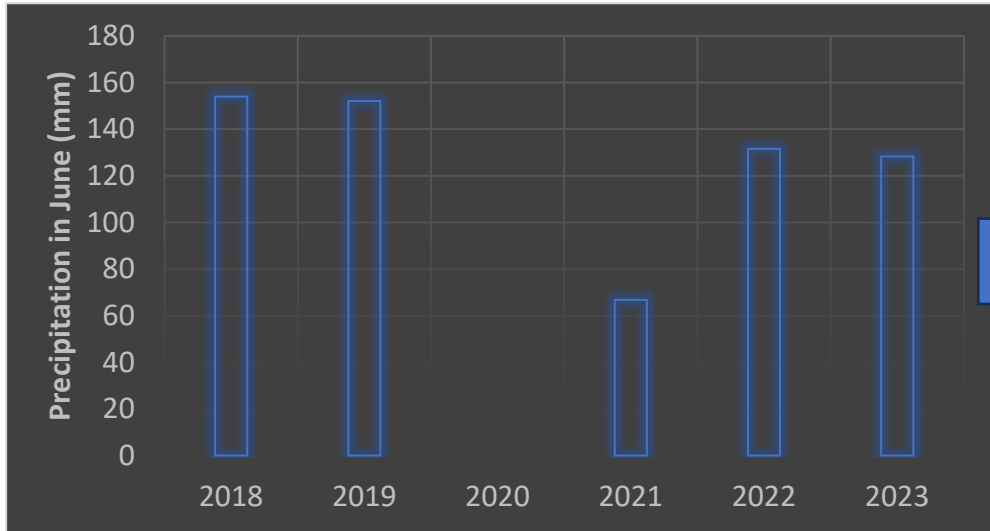


Any questions?
Suggestions?
Comments?
Other discussion items?



Spatfall Issues

Poor Set in Some Areas *Rainfall??*



Significant?