Lobster Quality
Preseason Sampling Program
Southwest Nova Scotia LFA33 & LFA34

Preseason Summary Report

November 2024

Submitted by:

Coldwater Lobster Association
368 Main Street, Suite 105 Lovitt Plaza
Yarmouth, Nova Scotia, B5A 1E9
Tel: (902) 742-5247
www.coldwaterlobster.ca

Naomi Martineau, Technician

Centre sur la qualité du homard (CQH)/Lobster Quality Centre (LQC)
Université Sainte-Anne, Centre de recherche marine
Campus de Petit-de-Grat
3433 Route 206
Petit-de-Grat, Nova Scotia, B0E 2L0
Tel: (902) 295-8054
https://www.usainteanne.ca/recherche/unites/cqh

Daniel E. Lane, Professeur associé – CQH/LQC

2024 LFA 33 & 34 Lobster Quality Sampling Summary

HIGHLIGHTS FOR 2024

Preseason sampling took place from early October to mid-November during periods of good weather mixed with rough seas at 4 inside and 4 outside sampling locations in LFAs 33 & 34. 24 preseason sampling dates and 2,400 lobster samples were examined. Revised protocol for 2024 are for 100 lobster samples per date; data collected for lobster sex, carapace length, blood protein (BRIX), hardness, moult stage, and egg-bearing status. The report focuses on BRIX trends over time and location as the key indicator of start of season lobster quality.

Compared to past years, in 2024, average BRIX levels have declined over the preseason sampling period in most locations. Lobster landings counts per sample in Inside areas are comparable to recent years whereas Outside area counts have declined for the second successive year. %Weaks have declined while %Soft+Medium lobsters have increased substantially in 2024 compared to the recent past years.

2024 Sampling Areas– 8 sampling locations: 4-INSIDE and 4- OUTSIDE; samples taken from October 7-November 13, 2024.

Introduction

This report summarizes results of preseason at-sea sampling in 8 locations within LFA33 and LFA34 from October 7 to November 13, 2024. This sampling program represents a continuation of the longstanding Atlantic Lobster Moult and Quality Project (ALMQ) 19- year longitudinal database that has continued uninterrupted since 2006. Preseason sampling was conducted by Coldwater Lobster Association in 8 different locations – the designated 'Inside' and 'Outside' areas of Lobster Bay, St. Mary's Bay, Yarmouth in LFA34, and Port La Tour in LFA33. Data analyses were carried out with the cooperation of the Centre de recherche marine/Marine Research Centre of the Université Sainte-Anne, Petit de Grat Campus. The 2024 preseason survey analysis on the status and prediction of lobster quality for the upcoming 2024-2025 commercial season was developed by the Centre de recherche marine/Marine Research Centre in collaboration with Coldwater Lobster Association and member partners of the southwest Nova Scotia lobster industry. We acknowledge this opportunity to maintain the ALMQ longitudinal database and to develop it for the future use by the industry and researchers.

From 2020 to the end of the 2024 fiscal year (March 31, 2024), annual financing for this project was provided by a Scientific Partnership Grant from the Atlantic Fisheries Fund (AFF) with continuing support of Fisheries and Oceans, Canada, the Nova Scotia Department of Fisheries and Aquaculture, and our industry partners. The Université Sainte-Anne Lobster Quality Centre (LQC) acknowledges that the 2024 preseason sampling was uniquely financed contemporaneously by the Nova Scotia Department of Fisheries and Aquaculture and industry partners. Consequently, this gracious initiative by the NSDFA averted a potential gap in lobster sampling for the current year. It is understood that going forward, new sources of financing are required by the current ALMQ partners
– Coldwater Lobster Association, the Lobster Quality Centre of the Université Sainte-Anne, and industry contributors, if the ALMQ database and analysis is to be continued and maintained for future

years.Itistheongoingobjectiveofthepartnerstoseekoutnewwaysandmeansoffinancingfuturesouthwest Nova area lobster sampling programs for the continuation of the ALMQ database and its research legacy on behalf of the valuable lobster resource.

2024 Sampling Protocols

As in previous years, individual lobster data on blood protein level (measured via a refractometer as the BRIX Index (mg/mL) – Figure 1), manual shell hardness (soft, medium or hard scale), moult stage (from 40 selected lobsters' pleopods per sampling point examined under a microscope), carapace length, and sex (male, female, berried female) data were collected manually for 2,400 individual lobster samples over each of
24 sample location-dates (100 lobsters/sample) across all 8 sampling locations.

Figure 1. Lobster blood sample used in refractometer to determine lobster blood protein (BRIX) level.

These lobster data, collected manually on-board survey vessels by the Coldwater data collection technician and recorded electronically (Figure 2), represent determinants of lobster quality. Quality lobsters are suitability for live storage and shipping, and high meat content for a superior dining experience. Lobster data analyzed in this report are provided as indicators to the Nova Scotia lobster industry about the early season status of the post-moult lobster harvest in the eight designated sampling subareas of LFAs 33 & 34.

Figure 2. Lobster preseason sampling equipment.

The results presented here focus on the distribution of the recorded BRIX levels for 2024 compared to past years' samples from the same preseason time and sampling locations over the full ALMQ database period 2006-2024. This information enables the industry to compare the 2024 sample results to known past years of observed preseason and subsequent in-season lobster quality and status.

In 2024, as in the past, BRIX index values below 6.0 mg/mL in a sampled lobster provide a probable indication of "Poor" quality lobster that is less than fully-meated, and is also less suitable for the live market for storage and shipping and for presentation at the dining table. BRIX index values between 6.0—7.99 are deemed as "Moderate" quality and indicate that lobsters may still be recovering from a prior moult, and are of concern with respect to quality. BRIX levels at 8 or above are indicative of "Good" quality and are more fully-meated lobsters and more suitable for live product storage and shipping and presentation for consumption. Table 1 below summaries the assignment of lobster quality and BRIX level indicator categories used in this report.

Table 1. Lobster Quality Indicators and BRIX Index Categories

Quality Indicator:	"Poor"	"Medium"	"Good"
Meat Content:	Most likely low	Not likely fully-meated	Likely fully-meated
Storage/Shipping:	Not ideal	Concerns	Likely suitable
Observed Lobster Quality Indicators:			
Blood Protein Level, BRIX index (mg/mL)	Less than 6.0	6.0 to 7.99	8.0 or greater
Shell Hardness	Potentially "Soft" (2)	Potentially "Medium" (4), recovering from previous moult	Likely "Hard" (5)
Appearance	Pale colour, evidence of carapace abnormalities, and/or shell disease	Acceptable colour, little evidence of carapace abnormalities or shell disease	Spring black-bodied, few carapace abnormalities
Shape/Size	Culls, misshapen claws, damage tocarapace	Small size, misshapen claws, limited damage to carapace	Commercial size, good body shape

The manual (carapace squeeze test) assessment of lobster shell hardness is a subjective indicator of lobster quality. Guidelines are in place for manual estimates of shell hardness on a subjective scale of 2 ("Soft"), 4 ("Medium"), and 5 ("Hard"). "Soft" lobsters are of poor quality, "Medium" lobsters are generally of mediocre quality, and "Hard" lobster are generally acceptable for further consideration with regard to quality. In 2024, as in previous years, shell hardness measures are not well correlated with continuous measures of lobster BRIX levels. Shell hardness measures are effective when used together with other information, e.g., lobster appearance, shape/size, weak status, and including information on when and where lobsters are harvested. Individual subjective indicators of quality, including shell hardness, are generally not considered as a sole determining factor in lobster quality prediction but may be used in conjunction with other indicators, e.g., BRIX, to assign quality to an individual lobster.

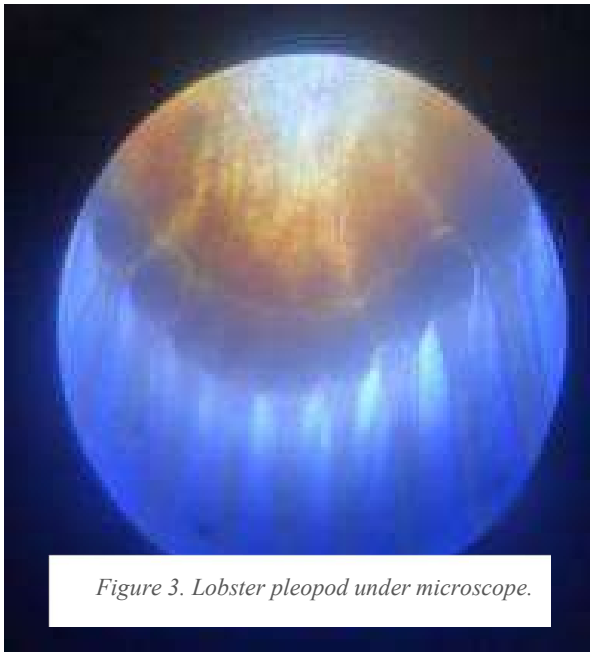


Figure 3. Lobster pleopod under microscope.

In previous years, the ALMQ sampling protocol was defined by 30 selected (male and female) lobsters whose pleopod is removed from each sample set of 100 lobsters per sampling location-date. In 2024 preseason sampling, 40 lobsters were selected for further pleopod analysis from a full set of 100 lobsters sampled by location-date for their biological characteristics including BRIX values at harvest, etc. Each lobster's moult status is determined by microscopic analysis of the lobster pleopod (swimmeret). Moult stage levels of zero (0) indicate no moult activity is pending; advanced moult stages (3+) indicate the moult is approaching and imminent. Pleopod analysis in female lobsters may also indicate the onset of the egg bearing cycle and the presence of cement glands. Figure 3 illustrates a lobster pleopod view for interpretation of moult stage by the technician-reader.

Overview of the 2024 Preseason Survey

In 2024, a total of 2,400 preseason lobster samples were taken over the 6-week period from October 7 to November 13, 2024 over 24 sample location-dates, or 3 samples per each of the 8 locations. As noted above, the 2024 sampling protocols were adjusted, in part, to accommodate the shift to a reduced financing operation and, to record a reduced number of sampling dates. As well, the 2024 program saw the arrival of a new lobster data collection technician, Naomi Martineau, who replaced 2020-2024 technician Karl Mattock. We take this opportunity to thank Karl for his valuable contribution to the lobster sampling program in southwest Nova since 2020 including his mentoring of Naomi into the data collection role that ensures a smooth transition to the ongoing integrity of the lobster quality database.

2024 Survey Sites. Figure 4 below illustrates the Google map for southwest Nova Scotia survey sites in 2024. The inserted map table in Figure 4 illustrates a survey location in Port La Tour (Inside) that took place on October 16, 2024. The interactive map[1] is freely available to review and enables users to examine in detail each of the survey points including identification of the starting string longitude and latitude, depth, bait used, weather conditions at haul, count of lobsters landed, average BRIX value of the sampled lobsters, and numbers of designated weak lobsters as a percentage of the sample.

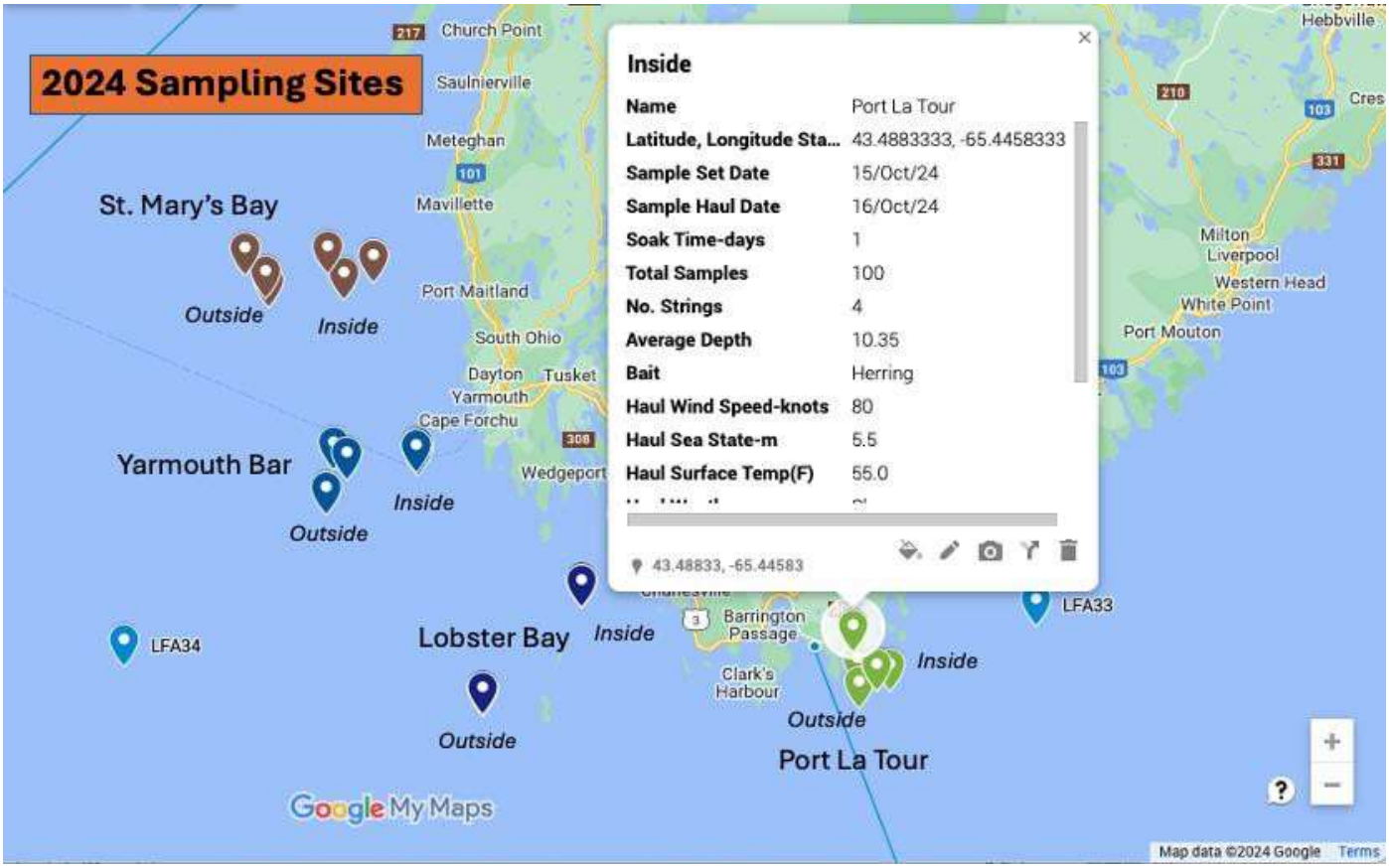


Figure 4. Map of 2024 Preseason Lobster Sampling Locations

[1] Readers of this report may access the Google Map of the 2024 Lobster Preseason Survey by clicking the underlined designated hyperlink. The map also displays the sites of the 2024 preseason surveys as well as the 2020, 2021, 2022, 2023 and 2024 surveys. For further information on accessing this map, please contact: Daniel.Lane@uSainteAnne.ca.

2024 Program Participation. Sampling on the survey sites was executed with the assistance of southwest Nova lobster harvesters. These members (Table 2) used their fishing vessels to carry out the protocols of the ALMQ program with the assistance of the Coldwater Lobster Association data collection technician. We acknowledge – with gratitude – their expertise and invaluable contribution to the ongoing work of the preseason lobster survey program in LFAs 33&34.

Table 2. Vessels Participating in the 2024 Lobster Quality Preseason Sampling Program

LOCATION	CAPTAIN	VESSEL NAME
St. Mary's Bay	E. Deveau	*Lady D.1*
Yarmouth Bar	K. Penney	*Betty Ann & Brats*
Lobster Bay	T. d'Entremont	*Jane Rose*
Port La Tour	W. Smith	*Relentless Pursuit 08*

***2024 Weather Conditions*:**

The 2024 pre-season survey faced several rough days including high winds and rough seas in late October and November with Lobster Bay often noted as the sloppiest fishing area. Aside from the difficult weather days, there were many pleasant days, with the sun shining and minimal swell. It was noted that the storms brewing in the south this fall were pushed offshore with little effect on the scheduled sampling days.

2024 By-Catch and Other Observations:

There was not much notable bycatch in the lobster sampling traps, with the exception of Jonah Crab throughthestart ofthesamplingperiodbeginninginearlyOctober. Jonah Crab were observed in all outside locations with the Outside location of Lobster Bay seeing crab in significant numbers. It is a general believed among fishermen that the presence of Jonah crabs generally correlates with lower Lobster catch rates. Based on what was observed in 2024, there was a concerning amount during the sampling this year. Apart from Jonah crabs, Cod were also observed in all locations with a few per sampling trip and Port La Tour having the most Cod of all 8 locations. As in 2023, there were a few spiny Dogfish that appeared in the traps in October, but not many.

In 2024, average BRIX levels observed throughout the preseason sampling period (October to November), declined compared to past years (2020-2023) for both Inside and Outside areas across all locations. Lobster total counts (legals plus sub-legals) in each location typically fall over the period of Inside samples, and rise over the period of Outside samples. This is consistent with the expected Inside to Outside movement of lobsters to deeper waters in LFAs 33&34 as the commercial season and winter nears. Lobster counts in Port La Tour samples were stable compared to past years (2020-2023); however, comparable counts were lower in Lobster Bay including a pattern of falling counts in Lobster Bay Outside. Counts in St. Mary's Bay Inside were higher than in 2023 (at 2022 levels) but decreasing into November, whereas counts in Yarmouth Inside were lower than in past years (contrasting the increasing trend from 2021 to 2023) and continuing to decrease into November. Counts in the Outside areas of St. Mary's Bay and Yarmouth were low (at 2023 levels) but increasing into November.

As in past years, the recorded database assigns codes in the event of observations of lobster shell disease observations also known as epizootic shell disease. In 2024 – as in the past preseason survey periods, there have been minimal observations of shell disease in captured lobster. For the first time since the 2020 sampling survey, a single observation of shell disease was confirmed by the Marine Research Centre, Petit de Grat. Figure 5 illustrates the lobster showing evidence of epizootic shell disease. Industry members are asked to report any and all such evidence to the Marine Research Centre, Petit de Grat at their convenience.

Figure 5. Lobster with evidence of shell disease. Source: Naomi Martineau.

Temperature Observations

Observations and analysis of water (surface and bottom) temperatures are being compiled for distribution in this report at a subsequent point in time. It is the objective of these analyses to attribute temperature shifts to the physiology, moult dynamics, and behavior of lobsters with respect to catches and catchability. It is noted that anecdotal reports following the 2023 Preseason Summary report attributed information on Outside areas counts declines to colder than normal water in Outside areas. Observations on temperatures collected in 2024 seek to attributed changes to indicators of potential temperature shifts.

Table 3 below presents a summary of the survey results for each of the 24 location-date samples in the survey program. Table 3 also reports soft and weak lobster percentages by sample and overall, as well as average BRIX per sample and overall.

Table 3. 2024 Preseason Sampling Survey Program

Sampling Location	Area	2024 Sampling Date	Total Harvested Lobster Count (#)	Lobsters Sampled (#)	Sample %Soft/ %Weak	Sample Ave BRIX level (mg/mL)
Yarmouth	Inside	October 9	601	100	16%/21%	8.25
		October 23	403	100	54%/4%	7.78
		November 5	258	100	17%/0%	8.78
	Outside	October 8	128	100	12%/6%	7.56
		October 22	352	100	44%/2%	7.22
		November 4	488	100	30%/3%	7.81
Lobster Bay	Inside	October 18	658	100	37%/3%	9.46
		October 29	624	100	33%/3%	9.92
		November 13	376	100	40%/3%	10.02
	Outside	October 17	670	100	41%/14%	7.95
		October 28	552	100	38%/11%	8.74
		November 12	475	100	41%/4%	8.58
Port La Tour	Inside	October 16	492	100	39%/2%	7.30
		October 30	381	100	40%/1%	7.78
		November 13	415	100	36%/0%	8.09
	Outside	October 15	251	100	47%/7%	6.93
		October 29	237	100	40%/3%	7.37
		November 12	310	100	49%/1%	7.84
St. Mary's Bay	Inside	October 8	717	100	22%/21%	7.85
		October 24	548	100	45%/2%	8.04
		November 6	493	100	32%/3%	8.00
	Outside	October 7	311	100	25%/9%	7.81
		October 23	474	100	46%/3%	7.25
		November 5	637	100	24%/3%	8.14
TOTALS	**8 location-areas**	**24 sample location-dates**	**10,851 lobsters landed**	**2,400 lobsters sampled**	**Overall % Soft/Weak 35.33%/5.38%**	**Overall Ave BRIX 8.10mg/mL**

Review of the 2023 Preseason Survey Results

In 2023, a total of 6,071 preseason lobster samples were taken over the 3-month period from September 4 to November 14 (11 weeks) in the selected subareas of LFAs 33 and 34. The results indicated that lobsters landed at the start of the 2023-2024 season in southwest Nova Scotia, were of overall good quality with 2023 preseason samples average overall BRIX at the moderate level of 9.78 mg/mL. BRIX results indicated that 2023 lobster quality had continued to improve relative to the lower quality regime experienced in southwest Nova Scotia since 2014.

In 2023, total landings (legal and sublegal lobsters) were 20,992 lobsters over 44 location-date samples. This represented a decrease of 29% versus the 2022 preseason survey landings of 29,446 lobsters, and a decrease of 12% over the 2021 preseason survey landings of 23,715 lobsters.

From September to October 2023, all 4 locations and Inside and Outside areas showed elevated BRIX during the early 2023 sampling periods. In 2023, Inside area average BRIX levels per sample tended to rise over the preseason sampling dates from early September to the end of sampling period in mid-November with average levels varying from a low below 8 mg/mL to over 12 mg/ml (Port La Tour).

For Outside areas, average BRIX levels were more stable over the sampling dates and varying between low levels of 7 mg/mL (Port La Tour at end September) to highs over 10 mg/mL (Lobster Bay in early November).

2023 preseason samples average overall BRIX at the moderate level of 9.78 mg/mL, representing a 3% improvement in the overall BRIX average for 2022 (9.46 mg/mL).

2023 preseason sampling results in LFAs 33 and 34 indicated that lobsters landed at the start of the 2023- 2024 season in southwest Nova Scotia, appear to be of overall moderate (M) quality by comparison with the entire 2006 to 2022 preseason database.

With respect to legal lobster counts per sample, St. Mary's Bay Outside showed a sharp decline in the 2023 total counts per sample of almost -50% compared to 2022 total counts per sample. For Yarmouth Outside, the average decline in total counts per sample in 2023 is -60% compared to the 2022 average total counts. These year-over-year declines in landings per sample led to the prediction that catches in the 2023-2024 commercial fishery would be lower in the Outside areas of St. Mary's Bay and Yarmouth based on the decline in total counts and legal counts per trap compared to the past years 2020-2022. In terms of counts per trap, over all 8 locations, average legal counts per trap in 2023 (9 legal sized counts per trap) were down by 24% compared to 2022 values (11.83 legal sized counts per trap).

Counts of soft and medium lobster increased from negligible amounts (5%) in 2020 to over 30% in the selected sampling dates in 2023 for both Yarmouth and Lobster Bay. These shifts in 2023 are evident in Port La Tour Inside and Outside areas but less so for St. Mary's Bay.

In 2023, weaks in the Inside locations averaged 10% per sample – an improvement over the 2022 value of 14.5%. Similarly, in 2023, weaks in the Outside locations averaged over 15% per sample – an improvement over the 2022 value of 18%.

Detailed information on the 2023 Preseason Survey can be found in the Lobster Quality Preseason Sampling Summary Report for 2023 (November 2023) and the Lobster Quality Preseason and In-season Sampling Final Report (April 2024).

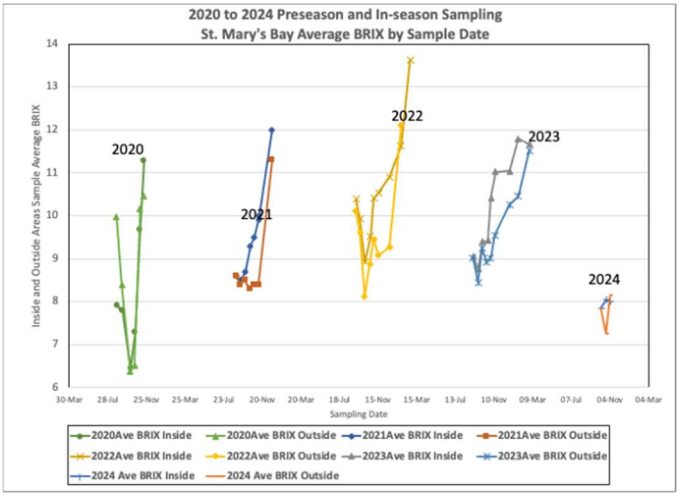
2024 Preseason Summary Highlights

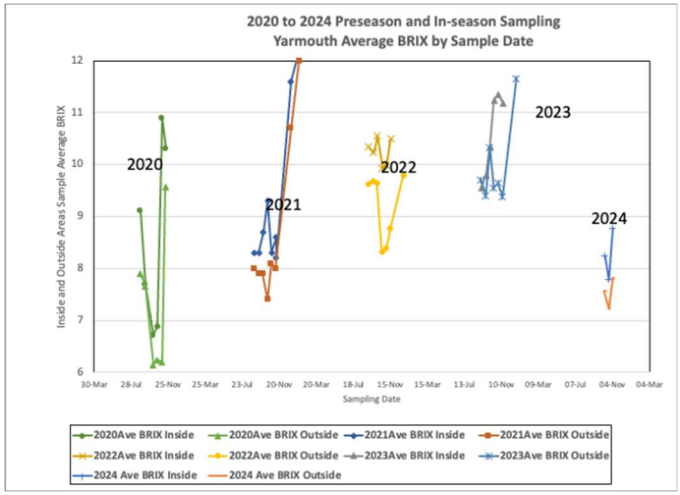
2024 Preseason Summary highlights are summarized below for: (1) BRIX level values; (2) lobster counts per trap; (3) lobster carapace hardness 'soft' and 'medium' values; and (4) percent weak lobsters in the samples.

1) BRIX Level Values

In preseason 2024, average BRIX levels per sample reversed the trend over all locations that showed a rise in averages from 2020 through 2023. While average BRIX levels per sample remain "Good", there is clear indication of a decline in 2024 average BRIX values. In the Inside areas, average BRIX levels per sample vary between a low of 7.3 mg/mL (Port La Tour) to a high of 10.02 mg/mL (Lobster Bay). In Outside areas, average BRIX vary between low levels of 7.25 mg/mL (St. Mary's Bay) to a maximum of only 8.58 mg/mL (Lobster Bay).

In the figures below, average BRIX values are shown for St. Mary's Bay and Yarmouth Bar and include samples for both Inside and Outside areas and for each of the indicated years 2020 to 2024. For St. Mary's Bay, overall average BRIX values are slightly rising from 2020 to 2023 followed by the approximate 25% overall drop in BRIX values for the 6 samples of 2024. The 2024 BRIX values place St. Mary's Bay back in the lower BRIX level averages of the 2014+ period.





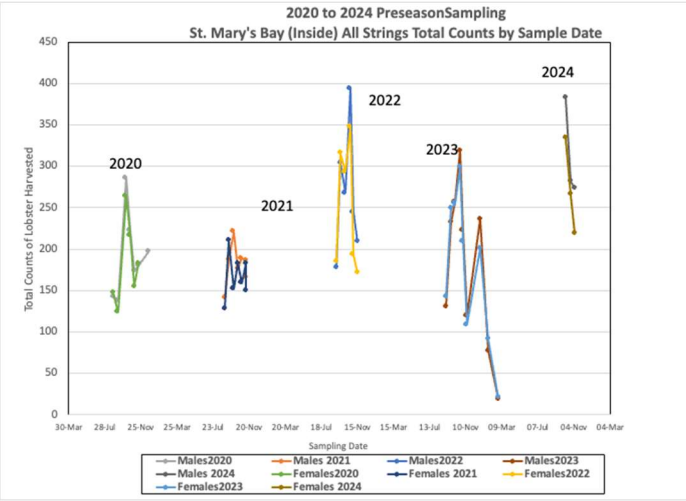
Similarly for Yarmouth Bar in 2024, overall average BRIX values per sample show a rising trend from 2020 to 2023. In 2024, however, Yarmouth Bar average BRIX values are below 9 in both the Inside and Outside areas representing a reversal of the increasing trends since 2020. As for St. Mary's Bay, Yarmouth Bar average BRIX values per sample place Yarmouth Bar back in the lower BRIX level averages of the 2014+ period. 2024 preseason sampling results in LFAs 33 and 34 indicate that lobsters landed at the start of the 2024- 2025 season in southwest Nova Scotia, appear to be of overall moderate-low (ML) quality by comparison with the entire 2006 to 2023 preseason database. 2024 preseason samples average overall BRIX (Table 3) at the moderate level of 8.10 mg/mL, a 17% decline in the overall BRIX average per sample for 2023 (9.78 mg/mL).

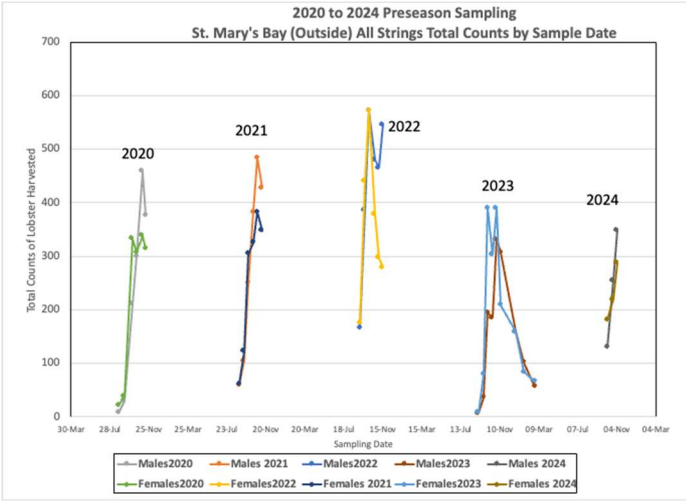
2) Lobster Counts Per Trap

In 2024, total landings counts of legal and sublegal, and male and female lobsters were 10,851 lobsters. This represents a decrease of nearly 50% versus last year's landings of 20,922 lobsters due primarily to the reduction in sampling location-dates from 44 in 2023 to 24 in the 2024 preseason period.

To examine comparable differences in sampling counts of lobster, the measure of total (legal and sublegal) lobsters landed per sample are determined for each year 2020 to 2024. The results are summarized for selected locations in the figures below. Legal landings of lobster counts per trap are also shown for each location and 2024 counts per trap compared to values in the historical years 2020-2023 for the sampling locations.

In the figures below, Inside and Outside total (legal and sublegal) counts are illustrated for St. Mary's Bay annually for each preseason sample over the years 2020 to 2024. Total lobster counts per 40-trap (on 4 strings) sample in St. Mary's Bay counts for 2024 are comparable in the Inside area (500 to 700 lobsters/sample) and the Outside area (300 to 600 lobsters/sample) and represent the overall highest counts per sample across all locations. While high for 2024, these values represent an overall decline compared to 2022-2023 as illustrated in the figures below. Clearly, St. Mary's Bay Inside areas are preferable and expectation should be for good catches in this area during the opening of the commercial fishery. Commercial catches at the start of the season in the deeper waters of St. Mary's Bay Outside areas are expected to be lower than past years.

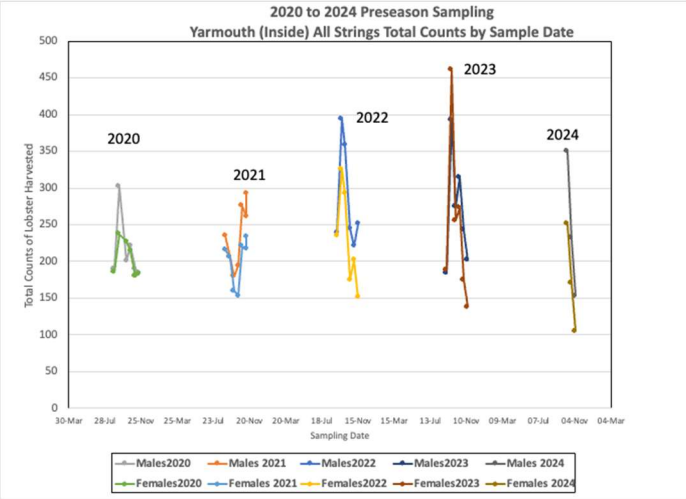


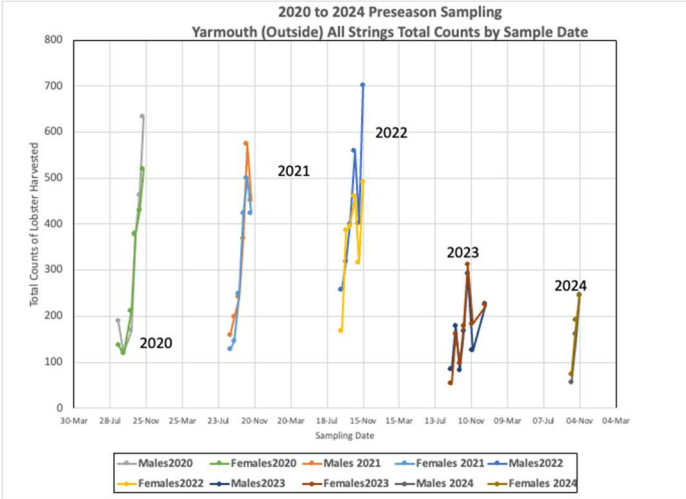


With respect to legal-sized lobster counts per trap, St. Mary's Bay counts for 40 traps per sample for 2024 are comparable in the Inside area (10.15 lobsters/trap) and the Outside area (9.98 lobster/trap) and represent the overall highest counts per trap across all locations. While high for 2024, these values also represent an overall decline compared to 2023.

The figures below are provided for Yarmouth Bar Inside and Outside for 2020 to 2024. These figures illustrate clear differences between the 2024 Inside and Outside area counts by sex (total legals and sub-legals) and the comparable past years' results (2020-2023) for this area. In particular, and as in 2023, Yarmouth

Outside, the average decline in total counts per sample in 2024 is down slightly from the 2023 counts which were 60% below those compared to 2020 to 2022.



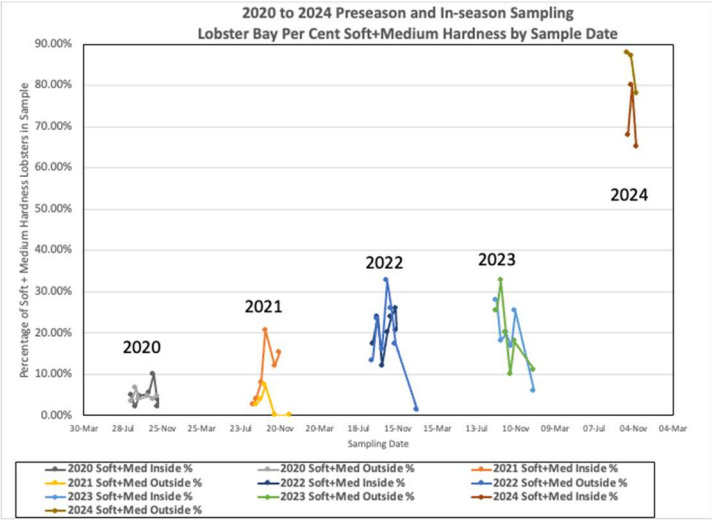


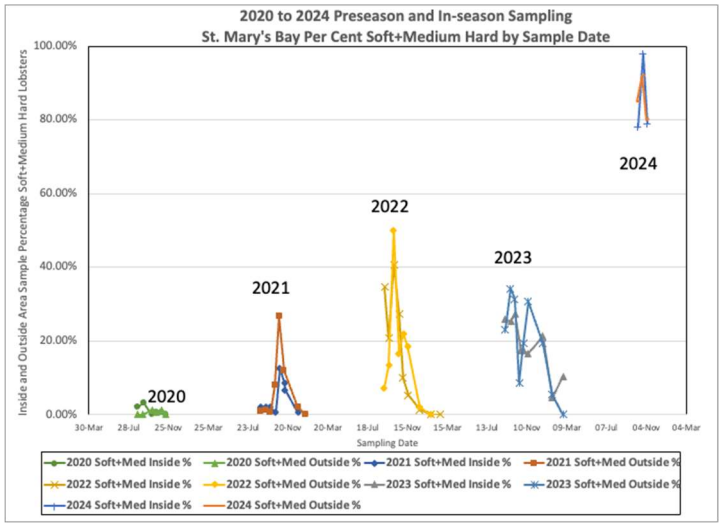
In the case of this sharp year-over-year declines in landings per sample, the expectation is that catches in the commercial fishery in 2024 will be once again lower in the Outside area Yarmouth based on the total counts and legal counts per trap over the past years 2020-2022. In terms of counts per trap, over all 8 locations, average legal counts per trap in 2024 (approximately 7 legal sized counts per trap) are down by 40% compared to 2022 values (11.83 legal-sized counts per trap).

For the cases of Port La Tour and Lobster Bay Inside and Outside areas, counts per sampled do not change appreciably from past years 2020 to 2023. Expectations are that commercial catches at the start of the season in these locations should be comparable to the past year, 2023.

3) Lobster Carapace Hardness in Samples

Lobster hardness measurements shifted in the 2024 preseason in comparison to the 2020 to 2023 past preseason survey results. The graphs below for Lobster Bay (Inside and Outside) and St. Mary's Bay (Inside and Outside) compare the counts (in percentage of the 100 samples protocol) of the combined counts for "Soft" (Hardness scale=2) and "Medium" (Hardness scale=4) for the preseason survey dates over the 5-year reporting period, 2020 to 2024. Counts of soft and medium lobster increased from negligible amounts (less than 10%) in 2020 to near 40% in the selected sampling dates for 2021 to 2023 for both Lobster Bay and St. Mary's Bay. In 2024 however, there has been a spike in Soft+Medium lobster in each sample where proportions of these less-than-ideal lobsters attain a dominant percentage of the sample (to over 80%). These dramatic shifts in 2024 are also evident in Port La Tour and Yarmouth Bar Inside and Outside areas. As in the past, it is understood that subjective measures of hardness are but one characteristic of determining lobster quality. While the 2024 hardness measures are concerning, we reserve judgment on their overall significance until a wider and longer time frame of hardness sampling is made.

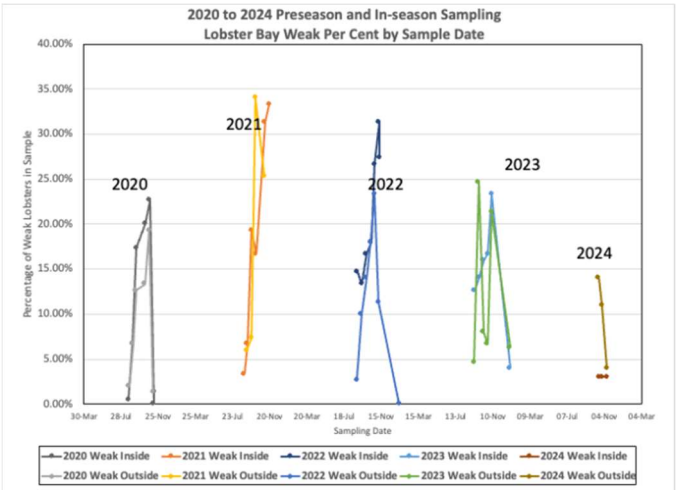




4) Percent Weak Lobsters in Samples

The percentage "weak" lobsters observed in 2024 preseason sampling was 5.38% weaks over all samples (Table 3). These observations represent an overall decline in the numbers of sampled weak lobsters compared to past years 2020 to 2023.

In 2024, weaks in the Inside locations averaged 5.25% per sample – an improvement over the 2023 value of 10%. Similarly, in 2024, weaks in the Outside locations averaged over 5.50% per sample – an improvement over the 2023 value of 15%. Lobster Bay (Outside), and Yarmouth Bar and St. Mary's Bay (Inside) areas dominated the incidence of weaks with average weak percentages over all samples of 9.67%, 8.33%, and 8.67% respectively. These higher values are compared to the overall average of weaks in all areas of 5.38% in 2024 (Table 3). Yarmouth and St. Mary's Bay weaks are lower overall in their respective Outside areas (with averages of 3.67% and 5.00% respectively, Table 4) below the overall mean. The illustration for Lobster Bay and St. Mary's Bay (Inside and Outside) weaks in the figures below depict the dynamics of weaks from 2020 to 2024. It is typical of all areas that weaks percentages of samples tend to become more varied, i.e., wider, over time with gradual increases from lower 2020 values trending to higher percentage values to 2023 followed by the decline evident in 2024.



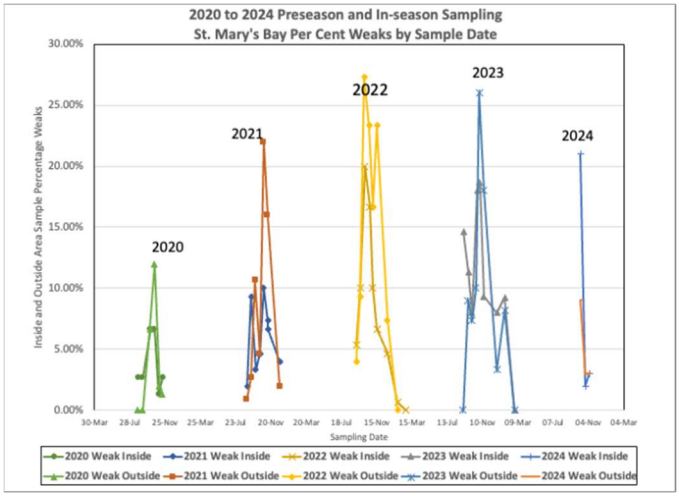


Table 4 below summarizes the 2024 preseason samples results for: (1) average BRIX level values over all preseason samples by location; (2) average lobster counts per trap; (3) average lobster carapace 'soft' and 'medium' percentage values in location's samples; and (4) percent weak lobsters in the samples by location;
(5) estimated overall lobster quality category; and (6) each location's 2024 most closely comparable historical year(s) from the historical 2006-2023 database.

Table 4. 2024 Preseason Sampling Summary Results

Locations: / 2024 Presea Samples	Yarmouth Inside	Yarmouth Outside	Lobster Bay Inside	Lobster Bay Outside	Port La Tour Inside	Port La Tour Outside	St.Mary's Bay Inside	St.Mary's Bay Outside	Overall Locations
Average BRIX (units/ml)	8.27	7.53	9.80	8.42	7.72	7.38	7.96	7.73	8.10
Ave Legal Counts Per Trap	7.36	6.94	8.19	10.25	7.76	5.42	10.15	9.98	8.26
%Soft+Medium	78.00%	80.67%	71.00%	84.33%	82.33%	92.33%	85.00%	85.67%	82.42%
%Weaks	8.33%	3.67%	3.00%	9.67%	1.00%	3.67%	8.67%	5.00%	5.38%
Estimated Overall Lobster Quality Category	ML	ML	ML	ML	ML	ML	ML	ML	ML
No. of Location-dates	3	3	3	3	3	3	3	3	24
Comparable Years	2018	2017, 2018	2016, 2017	2015	2019	2019	2018	2019	2015-2019

5) Berried Females Observations

Berried (egg-bearing) females were examined in considerable detail again in the 2024 preseason surveys. Of the 24-sample location-date combinations, 17 captured at least 1 berried female ("seed") lobster and as many as 117 (maximum observation – Lobster Bay Inside, October 29 sample). The average observed was approximately 14 berried females per sample date or 7.3% (339) of all female lobsters captured (4,649) during the 2024 preseason survey dates. The 2024 percentage of berried females numbers were the largest in the annual preseason recorded dataset to date. In 2020 through 2023, those figures were 2.5% (270 berried females on 10,851 female lobsters captured in 2020), 1.6% (165 on 10,435 in 2021), 2% (245 on 12,434 in 2022), 3.6% (350 on 9,711 in 2023 respectively. Berried female analyses also recorded carapace size, clutch fullness, egg stage and condition. Analyses of these and other berried female data are provided in further detail in the full report of the 2024-2025 Preseason and In-season Lobster Quality Sampling Program scheduled to be released in March 2025.

Summary of 2024 Predictors

Predictors for the start of the commercial season (end-November to mid-December 2024) are provided:

(1) average BRIX level values by 8 locations;

(2) average legal-sized lobster counts and weight (kg) per trap by 8 locations; and

(3) average percent weak lobsters by location.

The logic for establishing the list of predictors is based on the extension of the observed 2024 preseason samples' results into the start of the commercial season for 2024-2025. From the start of the commercial season (scheduled for Monday, November 25, 2024), lobsters are preparing to move from the post moult stage to the premoult stage over the winter of 2024-2025. The premoult stage is characterized by hardening of lobster shells and lower incidence of lobsters with soft and medium scale carapaces, and lower incidences of otherwise weak lobsters. Estimates of these predictors into the mid-December period anticipate the rate of improvement of lobster quality status overall. Finally, the estimate of counts per trap takes into account the increased catchability of lobsters as well as the draw down in catchable lobster abundance in each location following the initial start of season fishing effort intensity. As evidenced from the data, the participation of the commercial fleet immediately after the season opens results in fishing effort that leads to a precipitous decline in catch counts of lobster per trap in all locations into the December-January period. Table 5 below presents the estimated predictor values based on the above assumptions to mid-December 2024.

Table 5. 2024 Preseason Sampling Predictors to mid-December 2024

Locations: / Predictors	Yarmouth Inside	Yarmouth Outside	Lobster Bay Inside	Lobster Bay Outside	Port La Tour Inside	Port La Tour Outside	St.Mary's Bay Inside	St.Mary's Bay Outside
Average BRIX (mg/mL)	9	8	10.5	9	8.5	8	8.5	8.5
Ave Legal Counts Per Trap	4	8	6	8	6	5	6	7
Ave Legal Wt (kg) Per Trap	2	4	4	4.5	3	2.5	4	4.5
Ave % Weaks	3%	3%	3%	5%	2%	2%	3%	3%

The predictor values in Table 5 are presented here to test the ability of this report in mirroring the results at the start of the commercial fishery. Feedback from industry about the viability of these predictors will assist in improving these predictor results based on the preseason sampling program observations.

Overall in 2024, BRIX levels across all locations are expected to remain "Good" as lobster proceed from post moult to premoult status. There is concern – especially in Outside areas – for a decline in commercial catch rates compared to past years, as indicated by the comparable fall in counts per trap over the sampling period especially in Yarmouth Bar where catches may be expected to drop by as much as 30% relative to previous years. The percent of weak lobster is expected to fall overall locations into December 2024.

2024 Preseason Survey Results by Sub-Area

In the information on the 2024 survey which follows, sample results by BRIX category are shown for each of the 8 sampling locations. Results present: (A) BRIX category series trend for the 2024 samples; (B) comparable BRIX category preseason sampling 3-4 weeks before the start of the commercial season for years 2012 to 2024; (C) lobster (legal-sized) counts and weight per trap for each sample in 2024 compared to comparable results in 2020 to 2023. The trends are described and predictions for the 2024 start-of- season are presented.

(A) Blood Protein (BRIX) Categories. The following pages present the survey breakdown of the 2024 BRIX results for each of the 8 lobster sampling locations. Results are provided for the BRIX indicator values ("Good", "Moderate", "Poor") for each location's 2024 sampling dates (see also Table 1 – BRIX Index Categories above).

(B) Annual graphics also compare recent years (generally from 2012 to 2023) to the current year (2024) sample mean BRIX, and BRIX distribution by category at the end of the annual survey 3 to 4 weeks prior to the start of the commercial season. Knowledge of BRIX values and lobster moult dynamics at the end of the survey period are used to provide a prediction of expected commercial average BRIX values provided for each of the 8 sampling locations.

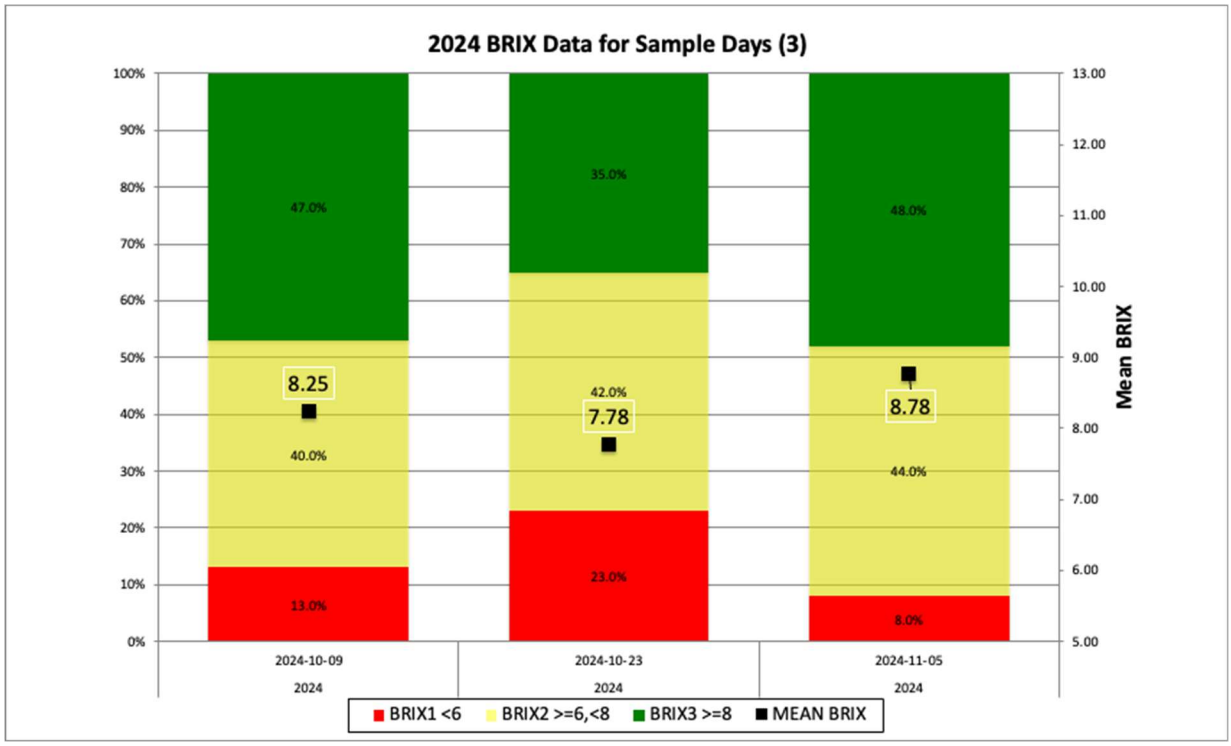
(C) In 2024, the accumulated (male and female lobsters) results of legal-sized total counts per trap that occurred in the survey dates and in past year's preseason sampling, 2020-2022 are presented. These survey values provide an indication of the potential catch per trap for the start of the commercial season and are also used in this report as an approximate predictor of commercial catch rates for each of the 8 sampling areas presented below.

YARMOUTH INSIDE

2024 SUMMARY OF RESULTS

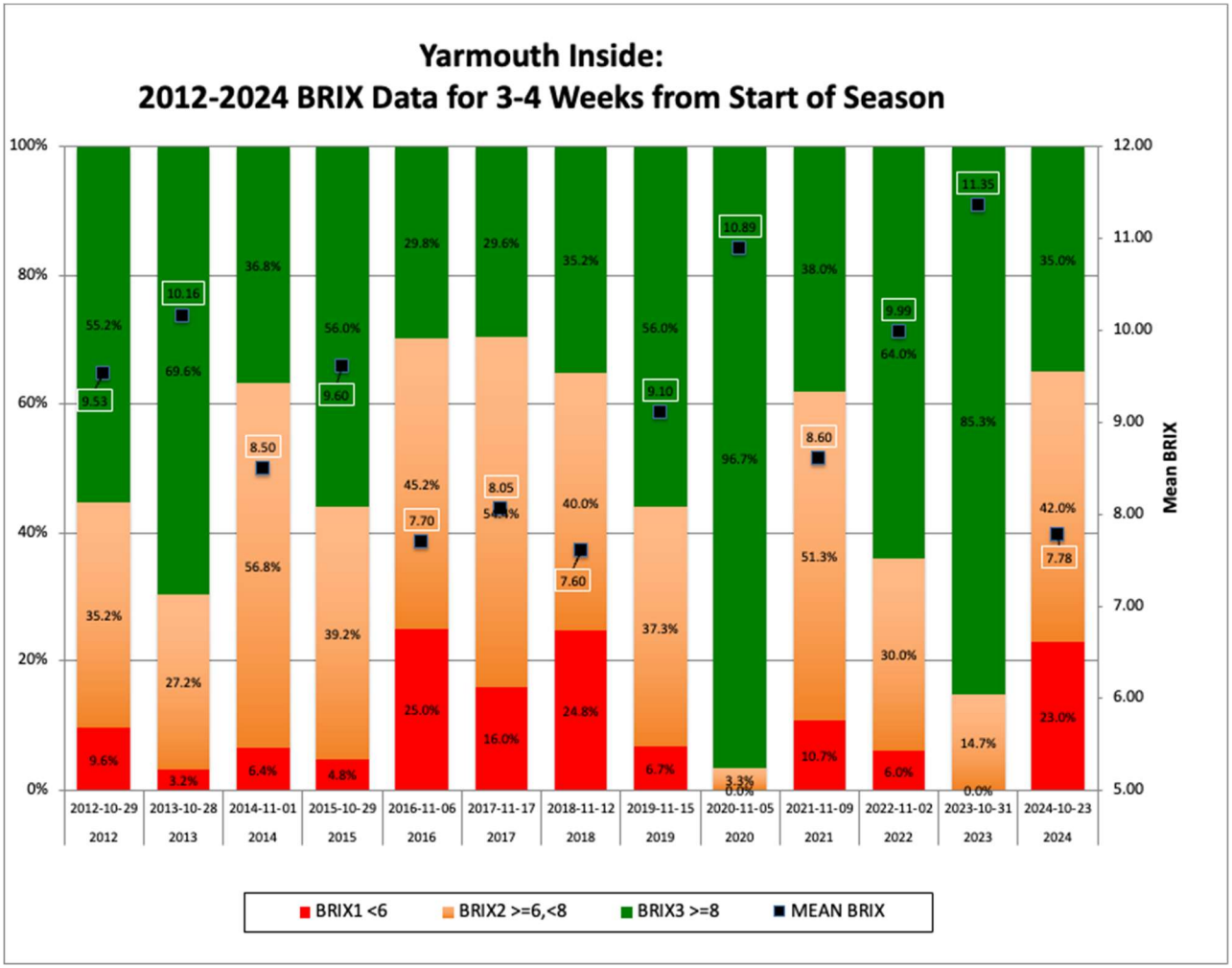
(A) Blood Protein (BRIX) Categories–2024Samples

In the figure below, 2024 preseason survey results for 3 sample sites in Yarmouth Inside show relatively steady average BRIX from early-October to mid-November samples. Approximately 40% of each sample attained "Good" levels of BRIX (≥8 mg/mL). The proportion of "Poor" lobsters (BRIX<6 mg/mL) sampled in Yarmouth Inside remains below 25% of all samples in 2024. Average BRIX level values for samples in 2024 varied slightly from a low of 7.78 mg/mL to a high of 8.78 mg/mL. Average BRIX values are 20-25% below all average BRIX in 2023 samples for Yarmouth Inside.



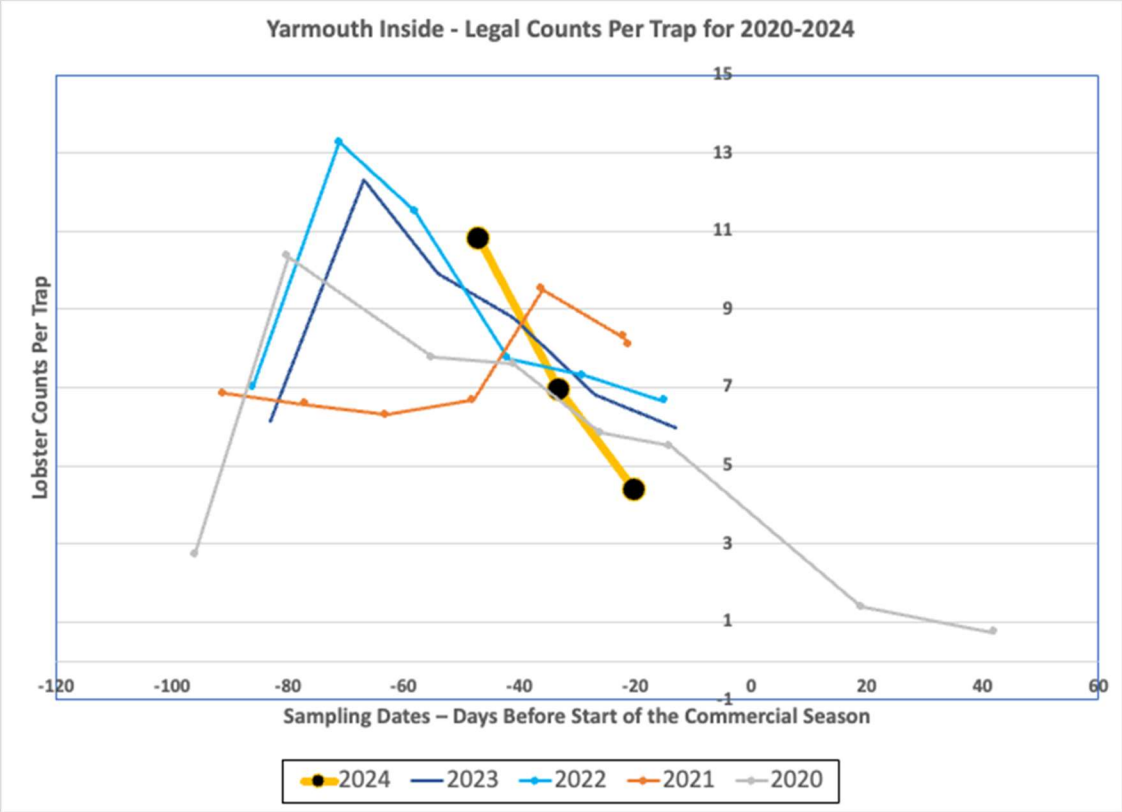
(B) Blood Protein (BRIX) Categories – Annual Samples 3-4 weeks before season start

From the figure below, annual samples 3-4 weeks from the start of each commercial harvest season opening are variable across the series from 2012 to 2024 for Yarmouth Inside. The 2024 sample (October 23) has the lowest BRIX average (7.78 mg/mL) in the series. The October 23, 2024 sample is comparable to the November 12, 2018 sample, the lowest BRIX mean in the series (7.6 mg/mL), with comparable BRIX category values.



(C) Counts (legal-sized) per trap for 2024 samples

In the figure below, the counts per trap of lobsters (male and female) of legal-sized (82.5 mm or greater) lobsters that occurred in the survey samples dates in 2024 (thick yellow line) are compared to past years' samples (2020-2023). The counts for Yarmouth Inside are comparable to past years' counts at comparable dates. The sole exception is 2021 when the time series of counts over the preseason in Yarmouth Inside exhibit a rise to end-September and then fall (by 50%) to the end of the sampling period (mid-November). As evidenced by the 2020 in-season sampling in the figure below, commercial catch rates in 2024 are expected to fall precipitously after the beginning of the commercial season through December 2024 and January 2025 as legal-sized lobster abundance is extracted.



Counts of weak lobsters in the 2024 Yarmouth Inside samples were initially large (21%) exceeding 2023 weaks in this area but then declined to zero by the end of sampling averaging just 8.33% per sample versus 7% (2023).

YARMOUTH INSIDE – Summary

1) Yarmouth Inside shows a relatively steady average BRIX from early-October to mid-November samples of 8.3 mg/mL. Approximately 40% of each sample attained "Good" levels of BRIX (≥8 mg/mL).

2) Yarmouth Inside Lobster Quality Category for 2024 samples are classified as "Moderate-Low" (ML). It is expected that "Good" BRIX levels will be maintained into December 2024 as lobster move from post moult to premoult status over the winter. The 2024 sample is most comparable to 2018 during the period of lower quality lobster in the commercial fisheries.

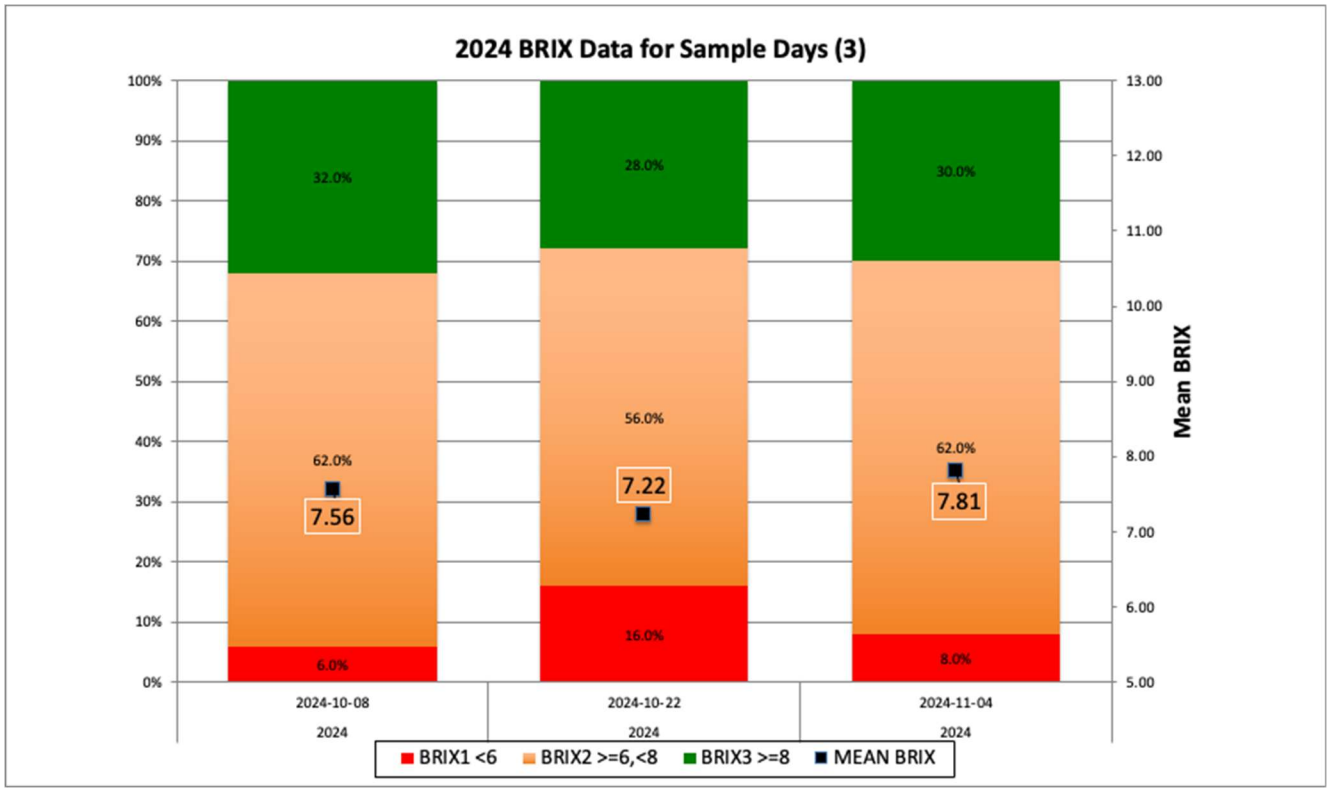
3) Yarmouth Inside sampling counts are comparable to past years' survey catch counts. It is anticipated that Yarmouth Inside initial commercial catch rates in 2024-2025 will be similar to recent years.

4) Yarmouth Inside Weaks samples average (8.33%) lobsters percentages exceeded the 2023 averages levels (7%) but weaks percentages were declining appreciably over the sampling period.

YARMOUTH OUTSIDE

2024 SUMMARY OF RESULTS

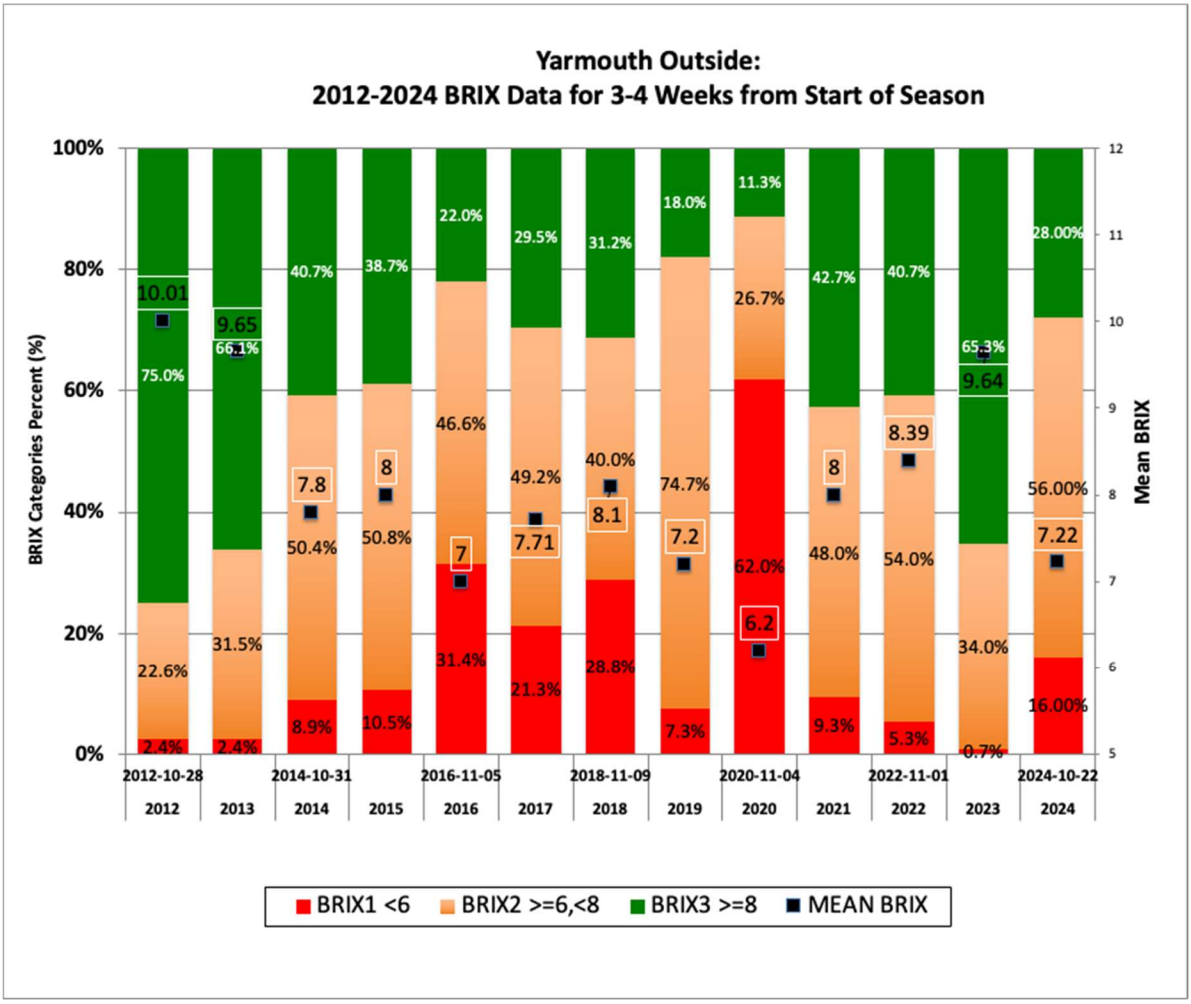
(A) Blood Protein (BRIX) Categories-2024 Samples



The 3 preseason samples in 2024 for Yarmouth Outside show a relatively constant average BRIX between low value of 7.22 mg/mL (October 2) and high value of 7.81 mg/mL (November 4). Throughout sampling, the percentages in the categories were also relatively constant. "Good" category lobsters (BRIX≥8) varied between 28% (October 22) and 32% (October 8). "Poor" BRIX category lobsters (BRIX<6) were below 16% percentages in all samples. Average BRIX level values for samples in 2024 (7.53 mg/mL) were below average values for 2023 (9.65) in Yarmouth Outside.

(B) Blood Protein (BRIX) Categories – Annual Samples 3-4 weeks before season start

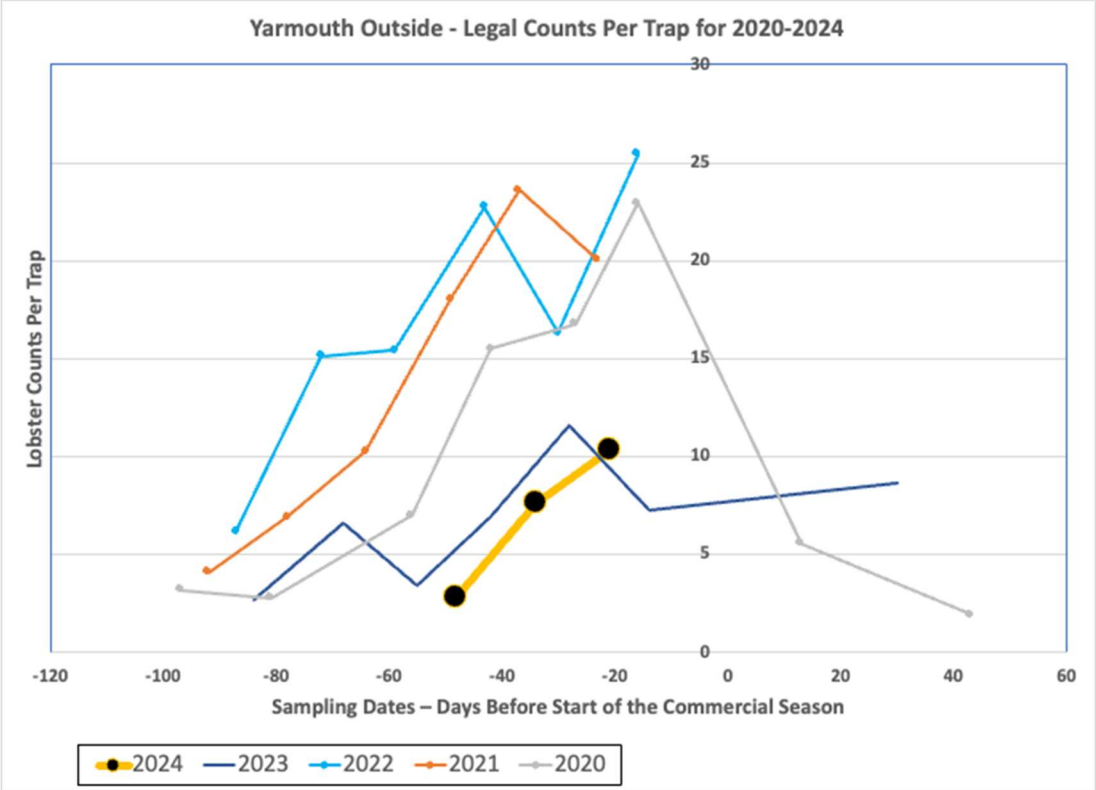
From the figure below, annual samples 3-4 weeks from the start of each commercial harvest season opening are variable across the series from 2012 to 2024 for Yarmouth Outside. The average BRIX for the 2024 sample of October 22 (7.53 mg/mL) is among the lower average BRIX values in the series. BRIX categories are directly comparable to years 2017 and 2018–years of known overall lower quality in the lower BRIX regime (since 2014).



(C) Counts (legal-sized) per trap for 2024 samples

In the figure below, the counts per trap of lobsters (male and female) of legal-sized (82.5 mm or greater) that occurred in the survey samples dates in 2024 are compared to past years' samples (2020-2023). The 2024 counts for Yarmouth Outside (thick yellow line) are considerably lower than the past years' counts by more than 50% for comparable sample date timing. As expected, the time series of counts per trap over the preseason in Yarmouth Outside exhibit a rise from the October samples through November when counts per trap begin the characteristic decline at the start of the commercial fishery. Commercial catch rates are expected to fall off even more at the beginning of the commercial season as legal-sized lobster abundance is extracted.

Counts of weak lobsters in the 2024 Yarmouth Outside samples were well below 2022-2021 values averaging 9.54% per sample versus 16-18% (in 2022 and 2021, respectively). The average weaks percentage for 2024 is slightly above the 2020 weaks percent of 8.34%. In 2024, the average percentage of Soft and Medium lobsters per sample (23%) fell compared to 2022 (29%) but were twice that of 2021 (11%) and still 7 times higher than the 2020 weaks percentage of 3.6%.



YARMOUTH OUTSIDE – Summary

1) Yarmouth Outside samples show a constant average BRIX of 7.5 mg/mL with percentage of "Good" category lobsters (BRIX≥8) of approximately 30% across all samples.

2) Yarmouth Outside Lobster Quality Category for 2024 samples are classified as "Moderate-Low" (ML). It is expected that "Good" BRIX levels will be maintained into December 2024 as lobster move from post moult to premoult status over the winter. The 2024 sample is directly comparable to the 2017 and 2018 samples, years of relatively low quality lobster in the commercial fisheries.

3) Yarmouth Outside sampling counts are considerably lower than past years' survey catch counts by approximately -50% per sample overall and similar to the 2023 low counts. It is anticipated that Yarmouth Outside initial commercial catch rates will be similarly reduced as compared to 2023.

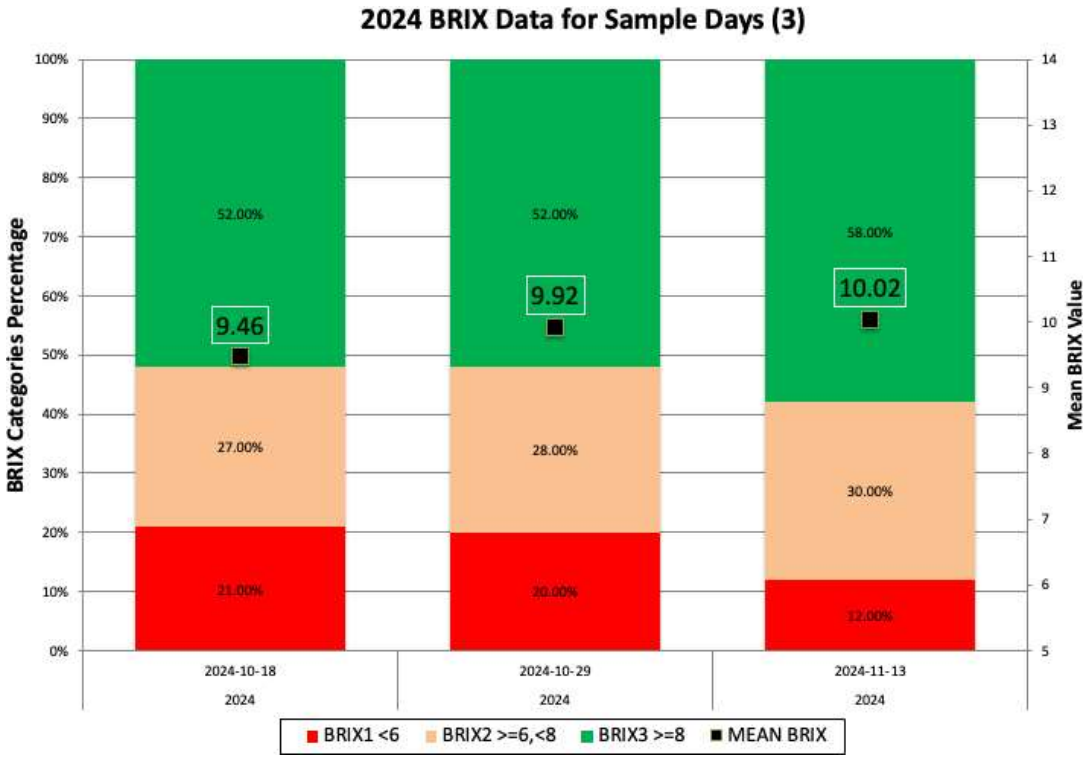
4) Yarmouth Outside Weaks (3.67%) lobsters percentages were below the comparable 2023 (9%) levels and among the lowest since 2020.

LOBSTER BAY INSIDE

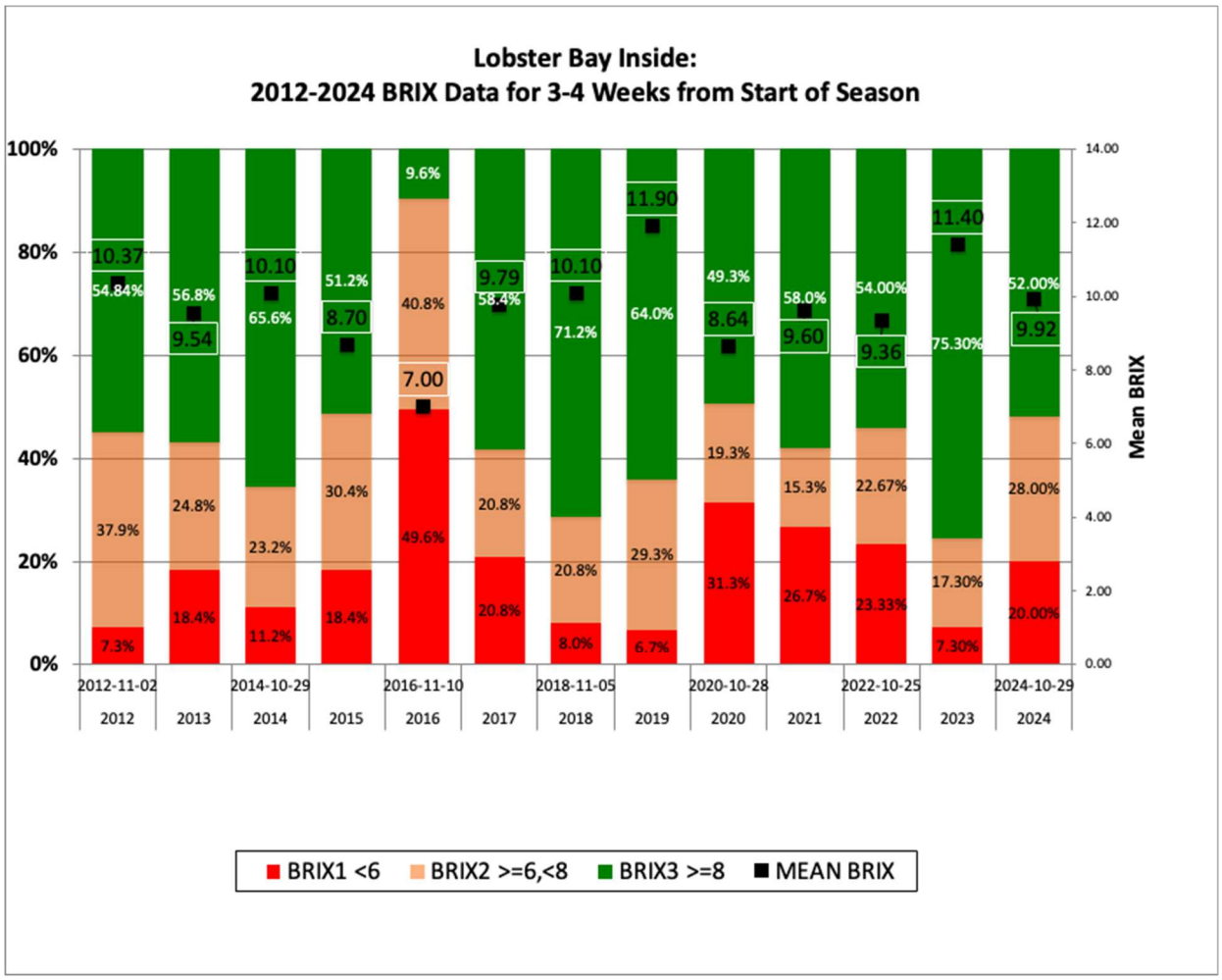
2024 SUMMARY OF RESULTS

(A) Blood Protein (BRIX) Categories–2024Samples

In the figure below, 2024 preseason survey results for 3 sample sites in Lobster Bay Inside show a slight rise in average BRIX from 9.46 mg/mL in early-October to 10.02 mg/mL by mid-November. Over 50% of all samples in 2024 attained "Good" levels of BRIX (≥8 mg/mL).



The proportion of "Poor" lobsters (BRIX<6 mg/mL) sampled in Lobster Bay Inside in 2024 averaged below 20% across all samples with the smallest in the final preseason sample of November 13 (12%). Average BRIX level values for samples in 2024 (9.8 mg/mL) were slightly below average BRIX values for 2023 (10.26).

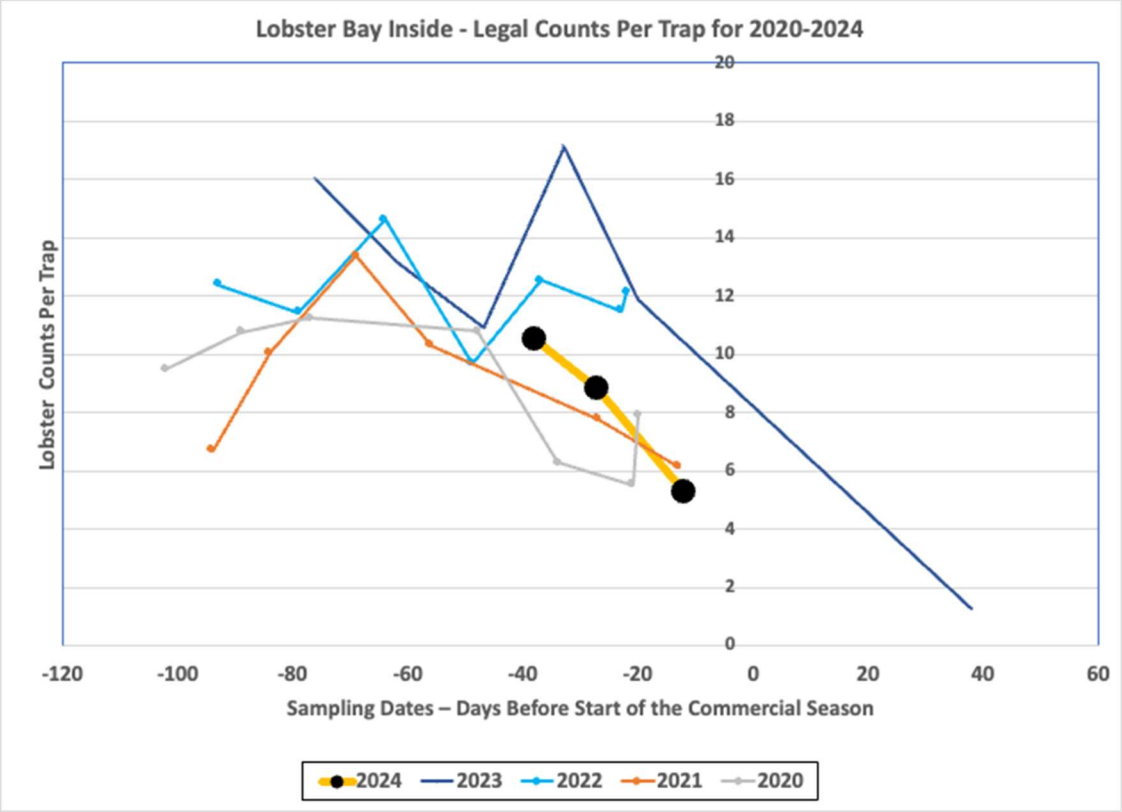


(B) Blood Protein (BRIX) Categories – Annual Samples 3-4 weeks before season start

From the figure above, annual samples 3-4 weeks from the start of each commercial harvest season opening are somewhat variable across the series from 2012 to 2024 for Lobster Bay Inside. The October 29, 2024 sample is directly comparable to the 2015 and 2017 samples.

(C) Counts (legal-sized) per trap for 2024 samples

In the figure below, the counts per trap of lobsters (male and female) of legal-sized (82.5 mm or greater) that occurred in the survey samples dates in 2024 (thick yellow line) are compared to past years' samples (2020-2023). The counts for Lobster Bay Inside sampling are generally highest among the 4 Inside locations surveyed in LFAs33 and 34. In 2024, Lobster Bay Inside counts are average when compared to past years' (2020-2023) counts at similar sampling dates. For Lobster Bay Inside, the time series of counts per trap over the 2024 preseason fall from October (11) through November (5). The highest counts per trap (11 lobsters per trap) in the October 18 sample are predominantly males. The evidence from the figure below is that commercial catch rates are expected to fall precipitously in Lobster Bay Inside after the beginning of the commercial season as legal sized lobster abundance is extracted.



Counts of weak lobsters in the 2024 Lobster Bay Inside samples (3%) were well below those in past years (2020-2023) when average weak values exceeded 10% per sample.

LOBSTER BAY INSIDE– Summary

1) ***Lobster Bay Inside shows a slight rise in average BRIX around 10 mg/mL from early-October to mid-November. Over 50% of samples attained "Good" levels of BRIX (≥8 mg/mL).***

2) ***Lobster Bay Inside Lobster Quality Category for 2024 samples are classified as "Moderate-Low" (ML). It is expected BRIX levels will be maintained into December 2024 as lobster move from post moult to premoult status over the winter. The 2024 sample is most comparable to years 2015 and 2017.***

3) ***Lobster Bay Inside sampling counts are comparable to past years' survey catch counts. It is anticipated that Lobster Bay Inside initial commercial catch rates will be similar to recent years.***

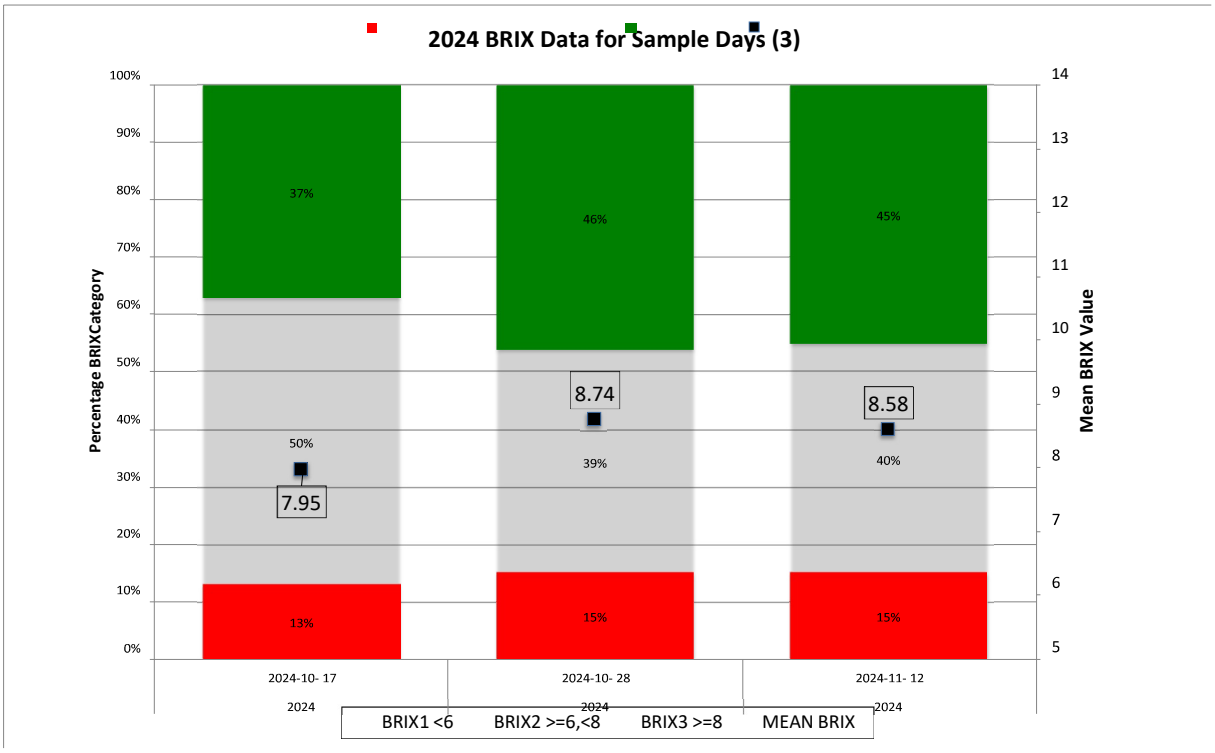
4) ***Lobster Bay Inside Weaks (3%) lobsters percentages are well below 2023 to 2020 weaks levels.***

LOBSTER BAY OUTSIDE

2024 SUMMARY OF RESULTS

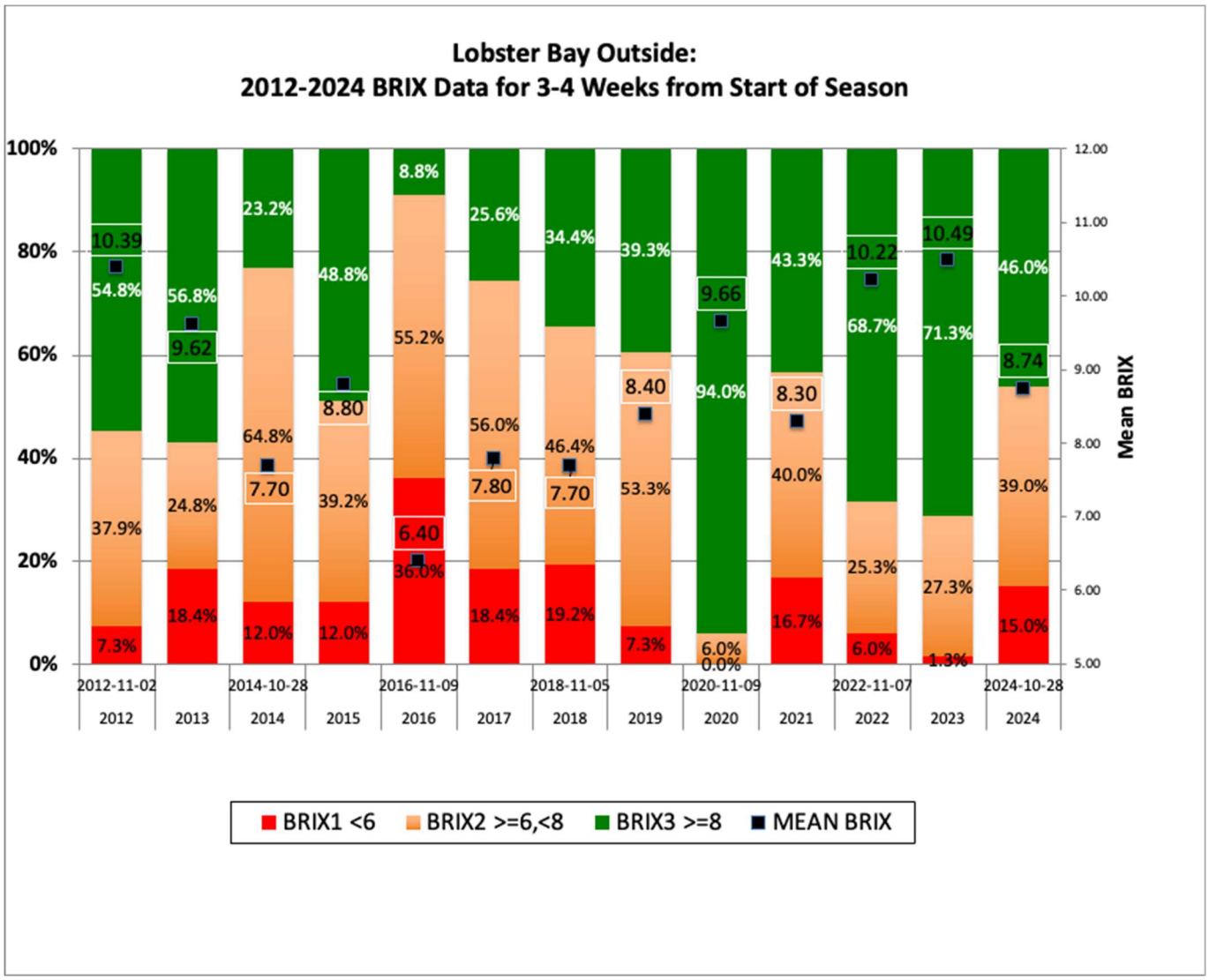
(A) Blood Protein (BRIX) Categories–2024Samples

In the figure below, 2024 preseason survey results for 3 sample sites in Lobster Bay Outside show a gradual increasing averageBRIXvaryingfrom7.95mg/mLinearlyOctobertto8.58mg/mLbymid-November.Largest average BRIX value (8.74) occurs for the intermediate October 28 sample. 37% to 46% of samples attained "Good" levelsofBRIX(≥8mg/mL)and incidencesof"Poor"lobstersinsampleswerelow–15%orlessin all samples.



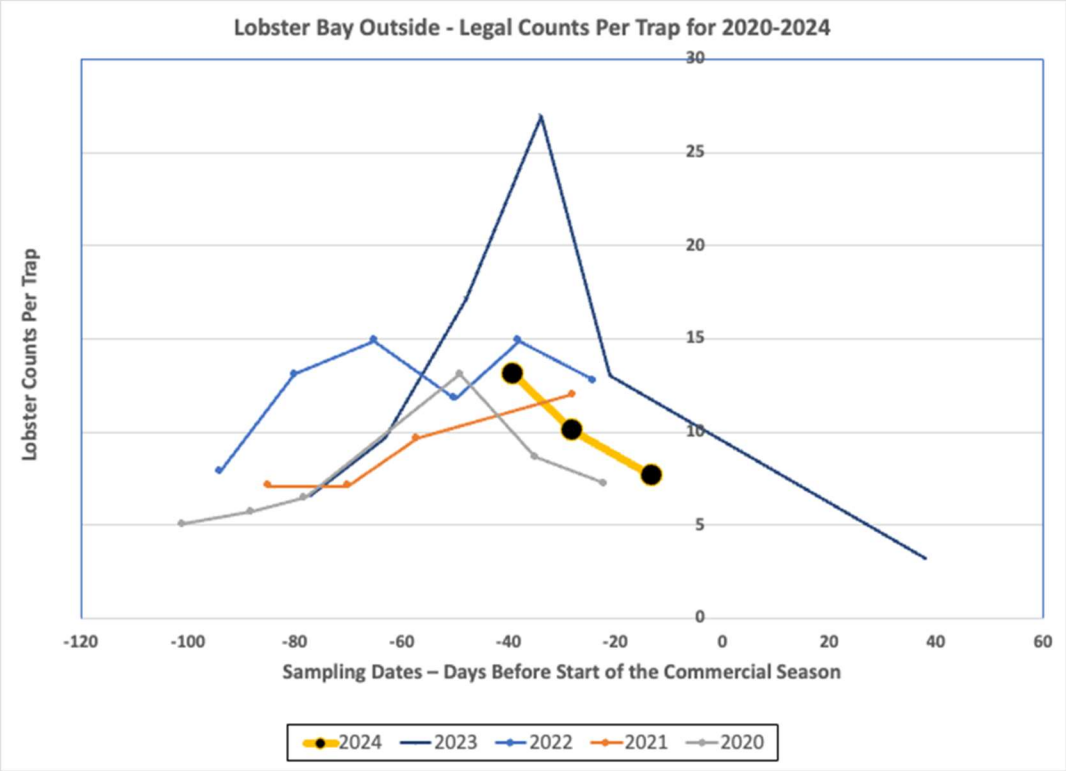
(B) Blood Protein (BRIX) Categories – Annual Samples 3-4 weeks before season start

From the figure below, annual samples 3-4 weeks from the start of each commercial harvest season opening are variable across the series from 2012 to 2024 for Lobster Bay Outside. The 2024 sample (October 28) has the intermediate BRIX averageof8.74mg/mLintheseries.TheOctober28,2024sampleiscomparable tothe2015and2021 samples withsimilar average BRIX value and similar BRIX category levels.



(C) Counts (legal-sized) per trap for 2024 samples

In the figure below, the counts per trap of lobsters (male and female) of legal-sized (82.5 mm or greater) that occurred in the survey samples dates in 2024 (thick yellow line) are compared to past years' samples (2020-2022). The counts per trap for Lobster Bay Outside sampling in 2024 are within the range of values for other years 2020-2023. In 2024, Lobster Bay Outside counts are comparable to past years' counts at similar sampling dates (the spike in counts for the October 24, 2023 sample excepted). Commercial catch rates are expected to fall precipitously in Lobster Bay Outside after the beginning of the commercial season as legal-sized lobster abundance is extracted.



Counts of weak lobsters in the 2024 Lobster Bay Outside samples (9.67%) are below those for 2023 to 2021 values (12%, 13% and 19% respectively). The percent of weak lobsters in Lobster Bay Outside in 2020 was only 10%.

LOBSTER BAY OUTSIDE– Summary

1) Lobster Bay Outside shows a gradually increasing average BRIX over the sampling period with overall average BRIX of 8.42 mg/mL. Over 40% of samples attained "Good" levels of BRIX (≥8 mg/mL) and incidences of "Poor" lobsters in samples were low at 15% or less in all samples.

2) Lobster Bay Outside Lobster Quality Category for 2024 samples are classified as "Moderate-Low" (ML). It is expected that BRIX levels will be maintained into December 2024 as lobster move from post moult to premoult status over the winter. The 2024 sample is most comparable to samples in 2015 and 2021.

3) Lobster Bay Outside counts are comparable to past years' counts at similar sampling dates. It is anticipated that Lobster Bay Outside initial commercial catch rates will be similar to catches in recent years.

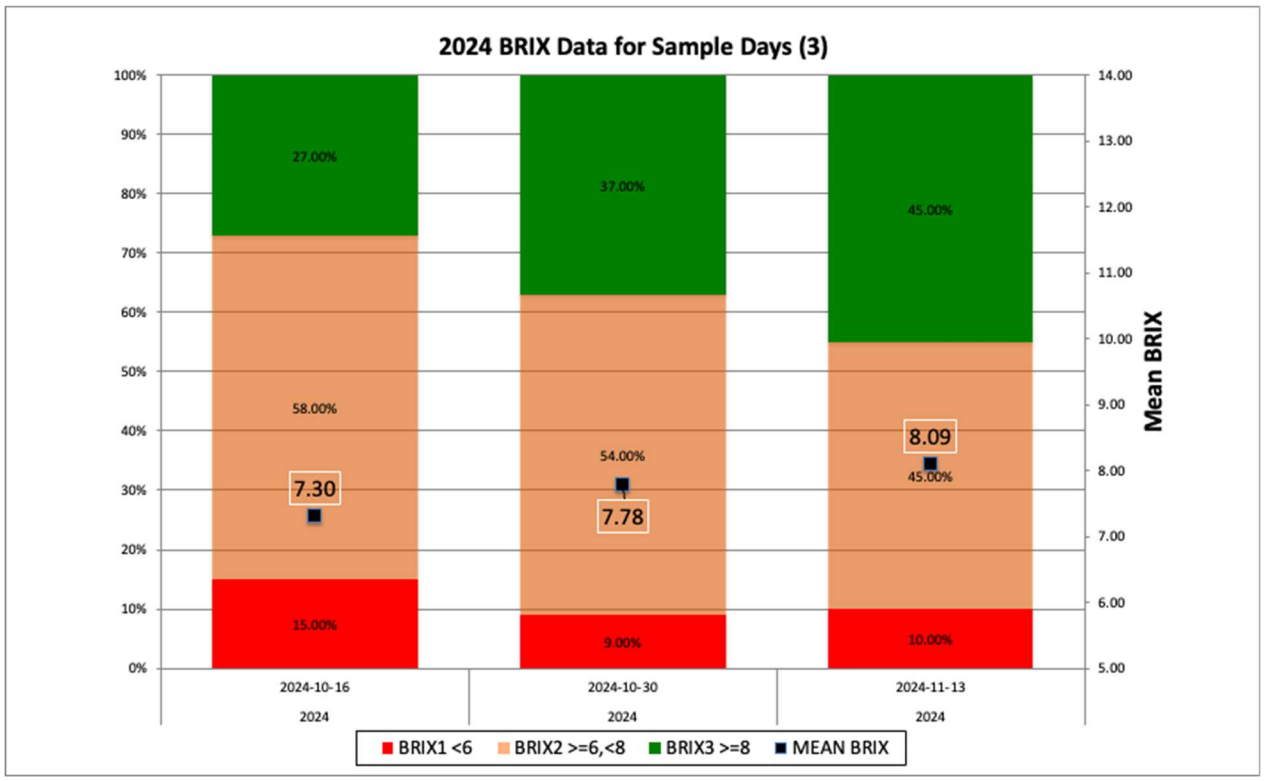
4) Lobster Bay Inside Weaks (9.67%) lobsters percentages were below comparable levels from 2023 to 2021 and similar to 2020 percentages.

PORT LA TOUR INSIDE

2024 SUMMARY OF RESULTS

(A) Blood Protein (BRIX) Categories–2024Samples

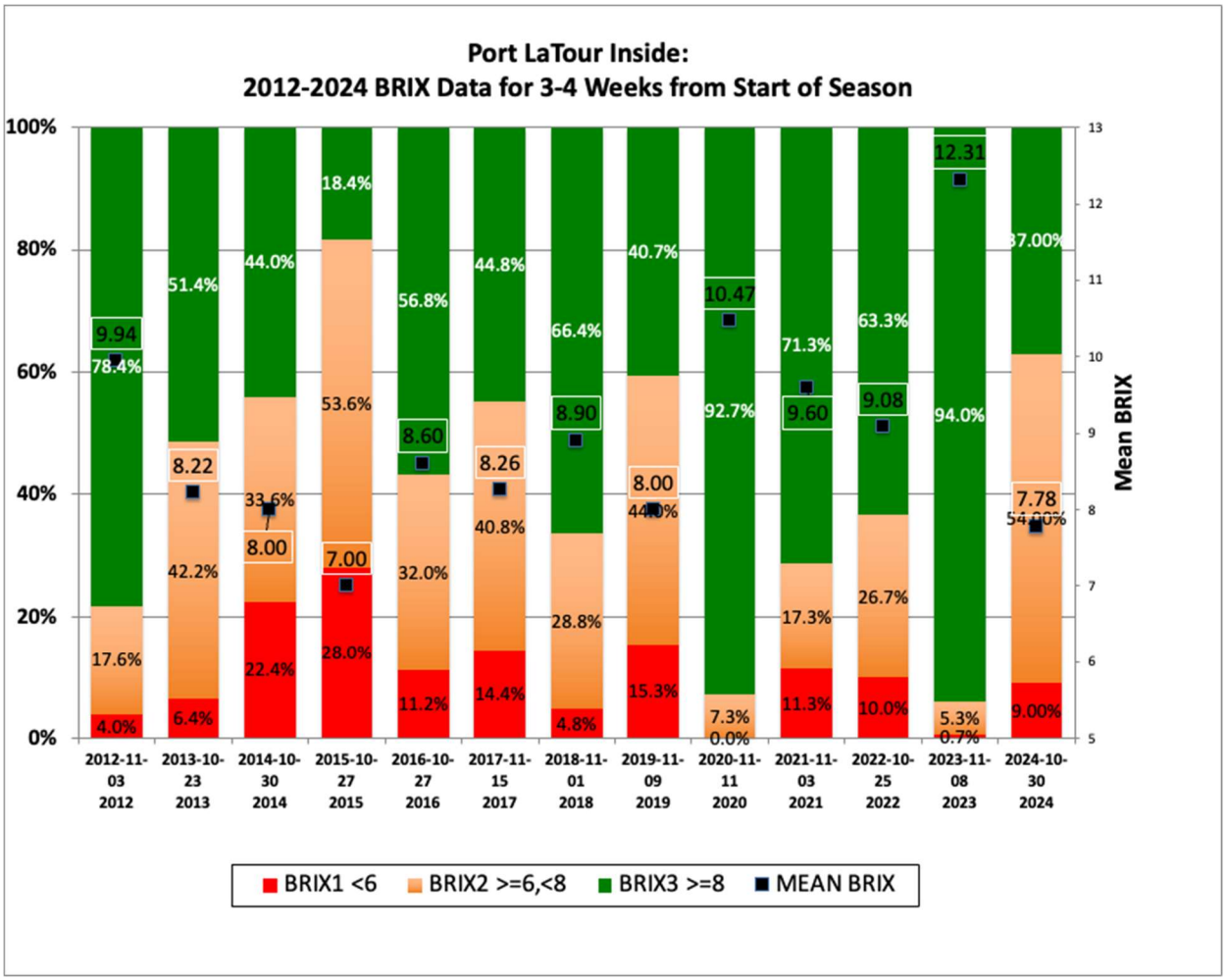
In the figure below, 2024 preseason survey results for 3 sample sites in Port La Tour Inside show a gradual rise in average BRIX from the early-October low (7.30 mg/mL) to the high of mid-November samples (8.09 mg/mL). "Good" levels of BRIX (≥8 mg/mL) also increased over time nearly doubling from 27% (October 16 sample) to 45% (November 13 sample).



Similarly, the proportion of "Poor" lobsters (BRIX<6 mg/mL) sampled in Port La Tour Inside remained at or below 15%. Average BRIX level values for samples in 2024 (7.72 mg/mL) were below the 2023 average BRIX of 9.9 mg/mL.

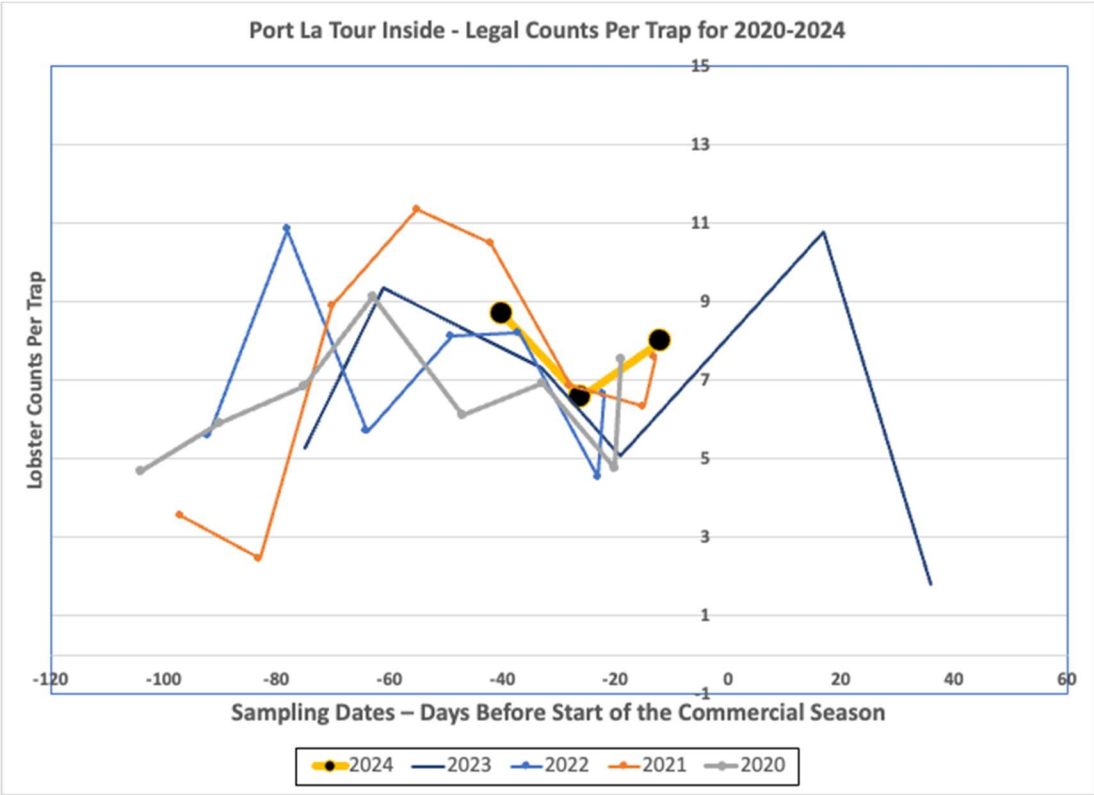
(B) Blood Protein (BRIX) Categories – Annual Samples 3-4 weeks before season start

From the figure below, annual samples 3-4 weeks from the start of each commercial harvest season opening are variable across the series from 2012 to 2024 for Port La Tour Inside. The October 30, 2024 sample is directly comparable to the November 9, 2019 sample but with an lower average BRIX value (7.78 versus 8.00 mg/mL).



(C) Counts (legal-sized) per trap for 2024 samples

In the figure below, the counts per trap of lobsters (male and female) of legal-sized (82.5 mm or greater) that occurred in the survey samples dates in 2024 (thick yellow line) are compared to past years' samples (2020-2022) for Port La Tour Inside. In 2024, Port La Tour Inside counts are comparable to past years' counts at similar sampling dates. As evidenced in the figure below, commercial catch rates are expected to fall precipitously after the beginning of the commercial season as legal-sized lobster abundance is extracted.



Countsofweaklobstersinthe2024PortLaTourInsidesamples(1.00%)werewellbelowthe2023values averaging 5.24% persample.

PORT LA TOUR INSIDE– Summary

1) Port La Tour Inside samples show a gradual rise in average BRIX from early-October (7.62 mg/mL) to the high of mid-November samples (8.09 mg/mL). "Good" levels of BRIX (≥8 mg/mL) double to 45% by the end of the sampling period.

2) Port La Tour Inside Lobster Quality Category for 2024 samples are classified as "Moderate-Low" (ML). It is expected that BRIX levels will be maintained into December 2024 as lobster move from post moult to premoult status over the winter. The 2024 sample is directly comparable to the 2019 sample but with a lower average BRIX value.

3) Port La Tour Inside sampling counts are directly comparable to past years' survey catch counts. It is anticipated that Yarmouth Inside initial commercial catch rates will be similar to recentyears.

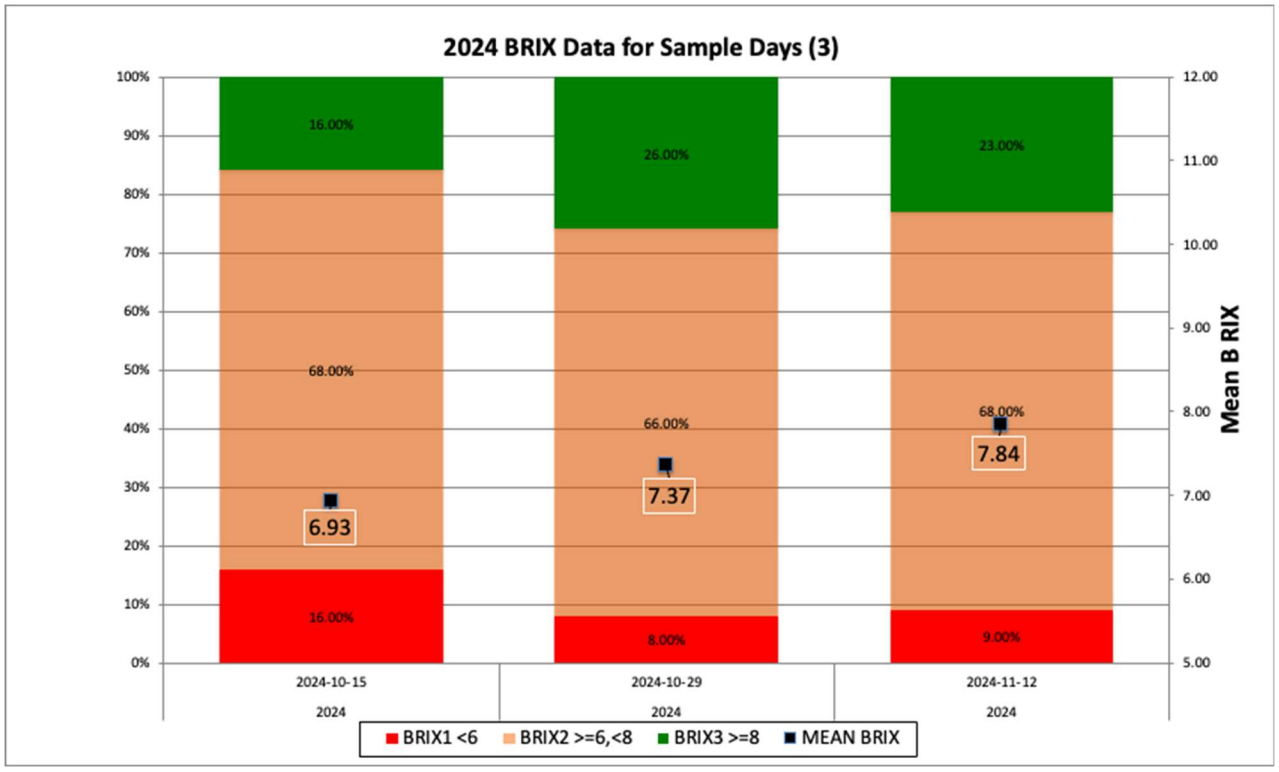
4) Port La Tour Inside Weaks (1%) lobsters percentages were below 2023 levels.

PORT LA TOUR OUTSIDE

2024 SUMMARY OF RESULTS

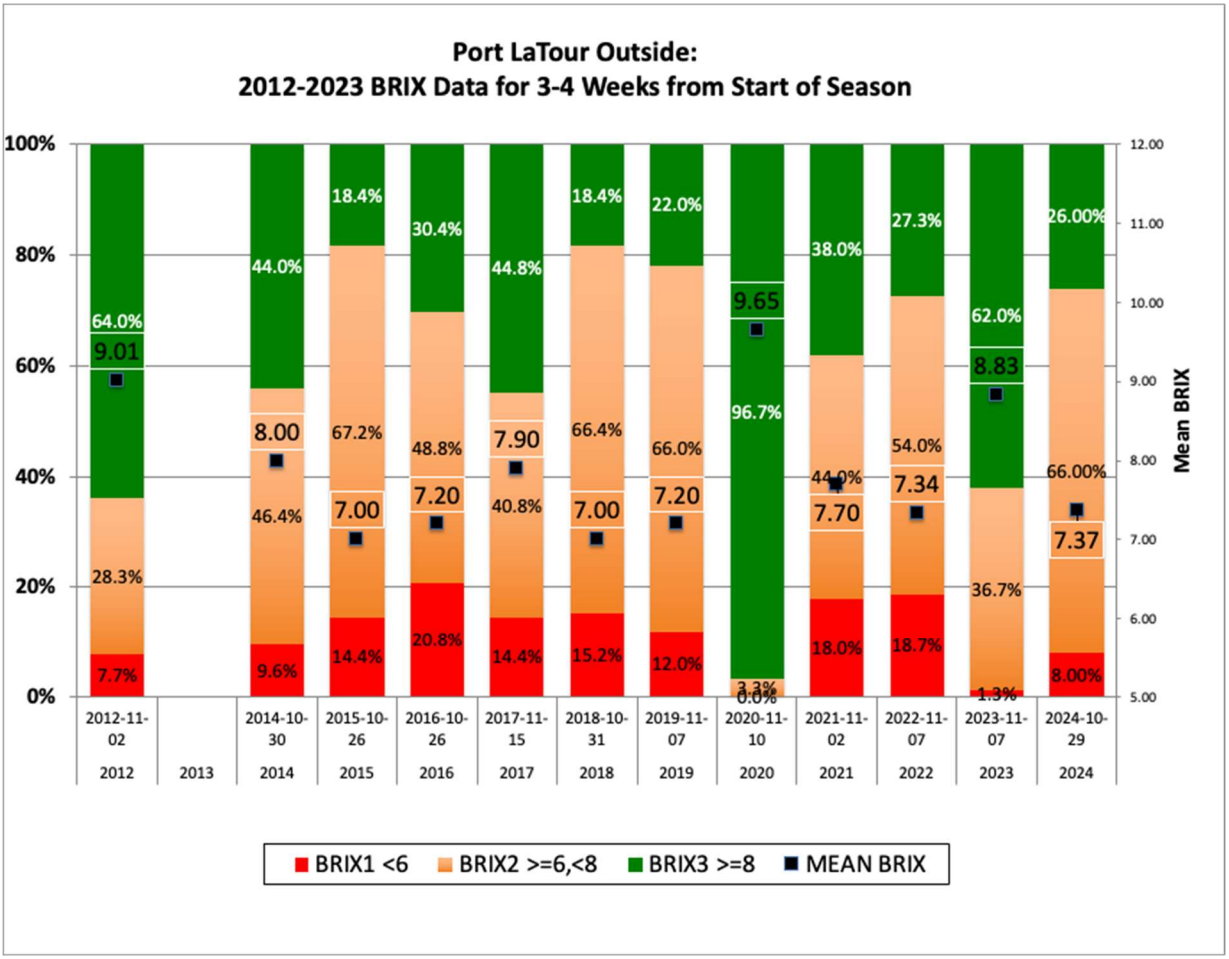
(A) Blood Protein (BRIX) Categories–2024Samples

In the figure below, 2024 preseason survey results for 3 sample sites in Port La Tour Outside show a gradual rising average BRIX ranging from a low of 6.93 mg/mL in mid-October to a high of 7.84 mg/mL in mid- November. The trend of the BRIX level categories is to grow the "Good" levels of BRIX (≥8 mg/mL) (from 16% to 23%) while decreasing the incidences of "Poor" lobsters in samples to the end of the sampling period (from 16% to 9%).



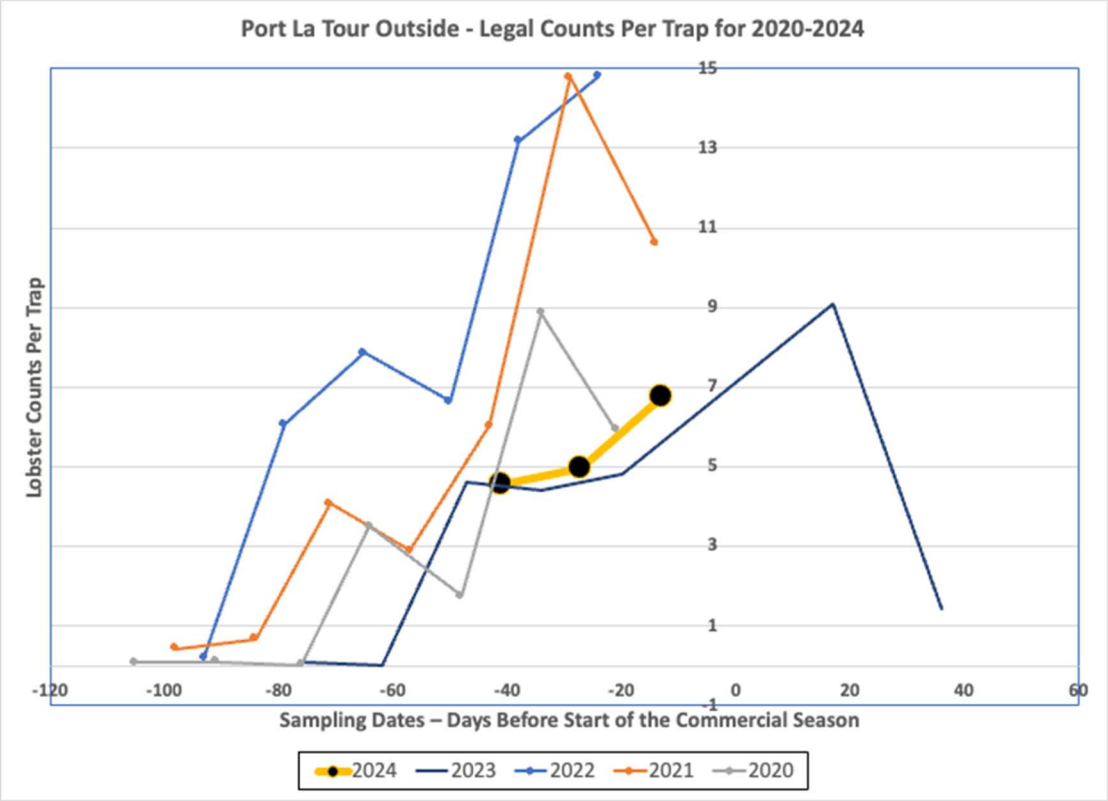
(B) Blood Protein (BRIX) Categories – Annual Samples 3-4 weeks before season start

From the figure below, annual samples 3-4 weeks from the start of each commercial harvest season opening are highly variable across the series from 2012 to 2024 for Port La Tour Outside. The October 29, 2024 sample is comparable to the November 7, 2019 sample with similar average BRIX value (7.2 versus 7.37 mg/mL) and comparable BRIX category levels.



(C) Counts (legal-sized) per trap for 2024samples

In the figure below, the counts per trap of lobsters (male and female) of legal-sized (82.5 mm or greater) that occurred in the survey samples dates in 2024 (thick yellow line) are compared to past years' samples (2020-2023) for Port La Tour Outside. In 2024, Port La Tour Outside counts are among the lowest in comparison to past years' counts at similar sampling dates. The 2024 time series of counts over the preseason in Port La Tour Outside exhibit a rise to the end of the sampling period (mid-November) similar to the 2023 counts series in this location. As evidenced the figure below, commercial catch rates are expected to fall precipitously after the beginning of the commercial season as legal-sized lobster abundance is extracted.



Counts of weak lobsters in the 2024 Port La Tour Inside samples were 3.67% below the 2023 values averaging 15.2% per sample versus 23.4% in 2022. Percent weaks in 2021 and 2020 were 10% and 5% respectively.

PORT LA TOUR OUTSIDE– Summary

1) Port La Tour Outside average BRIX values increase slightly over the sampling climbing to an average BRIX of 7.84 mg/mL by the end of the sampling period (November 12).

2) Port La Tour Outside Lobster Quality Category for 2024 samples are classified as "Moderate-Low" (ML). It is expected that moderate BRIX will be maintained into December 2024 as lobster move from post moult to premoult status over the winter. The 2024 sample is comparable to the 2019 sample with similar average BRIX value (7.2 versus 7.37 mg/mL) and BRIX category levels.

3) Port La Tour Outside counts for 2024 are similar to the 2023 counts and are among the lowest in the time series. Counts per trap are approximately 50% below those of 2020-2022 to the end of the sampling period. It is anticipated that Port La Tour Outside initial commercial catch rates will be similar to the lower levels of 2023.

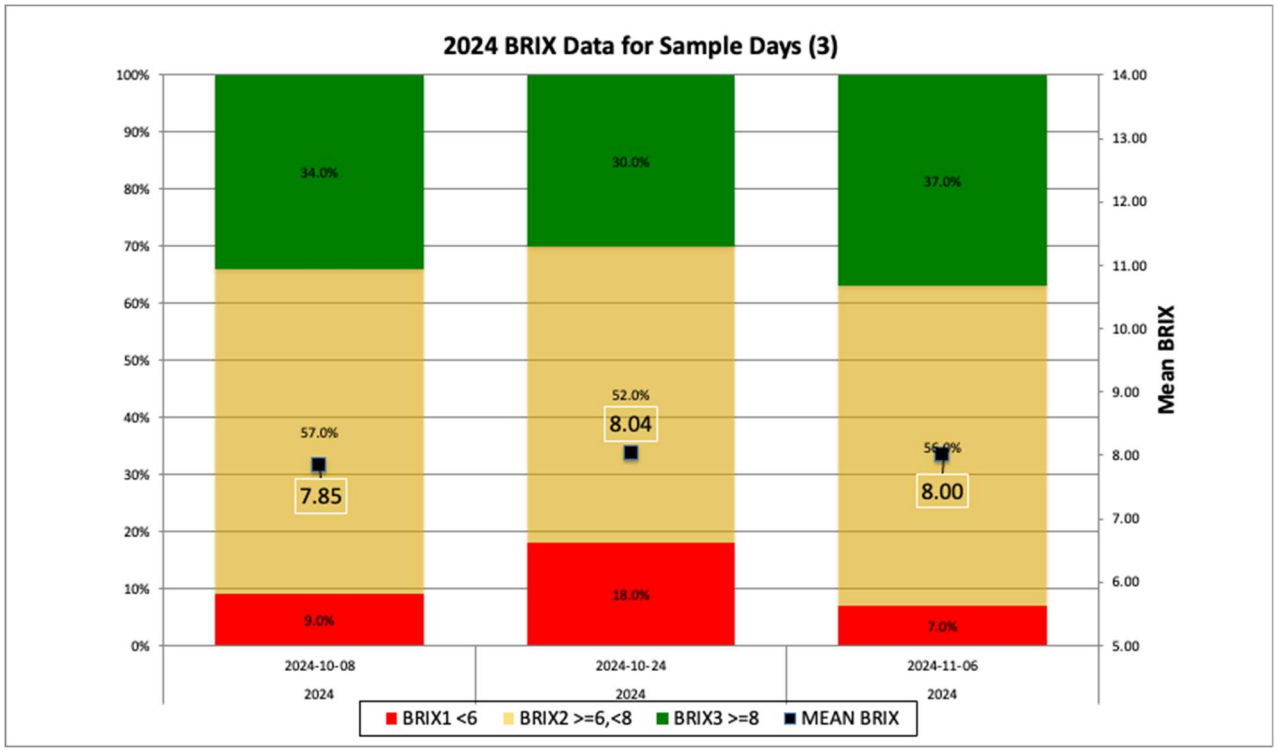
4) Port La Tour Outside Weaks (3.67%) lobsters percentages were among the lowest in the time series approaching the low levels of 2020 percentage values (5%).

ST. MARY'S BAY INSIDE

2024 SUMMARY OF RESULTS

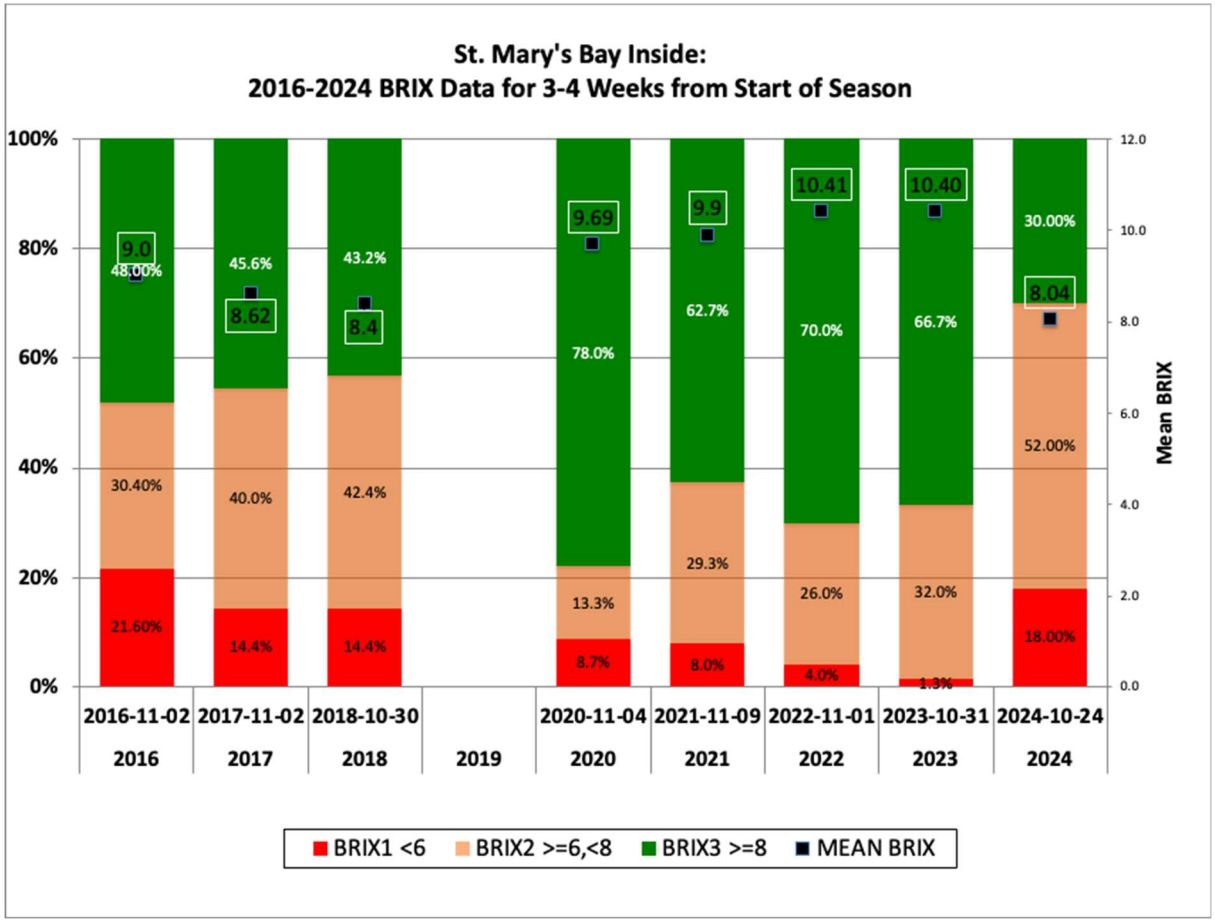
(A) Blood Protein (BRIX) Categories–2024 Samples

In the figure below, 2024 preseason survey results for 3 sample sites in St. Mary's Bay Inside show a constant average BRIX from the October samples (7.85 and 8.04 mg/mL) to the final early-November sample (8.00 mg/mL). BRIX category levels also remain relatively constant with samples attaining 30-37% "Good" levels for BRIX (≥8 mg/mL). The proportion of "Poor" lobsters (BRIX<6 mg/mL) sampled in St. Mary's Bay Inside did not exceed 18% throughout the sampling period.



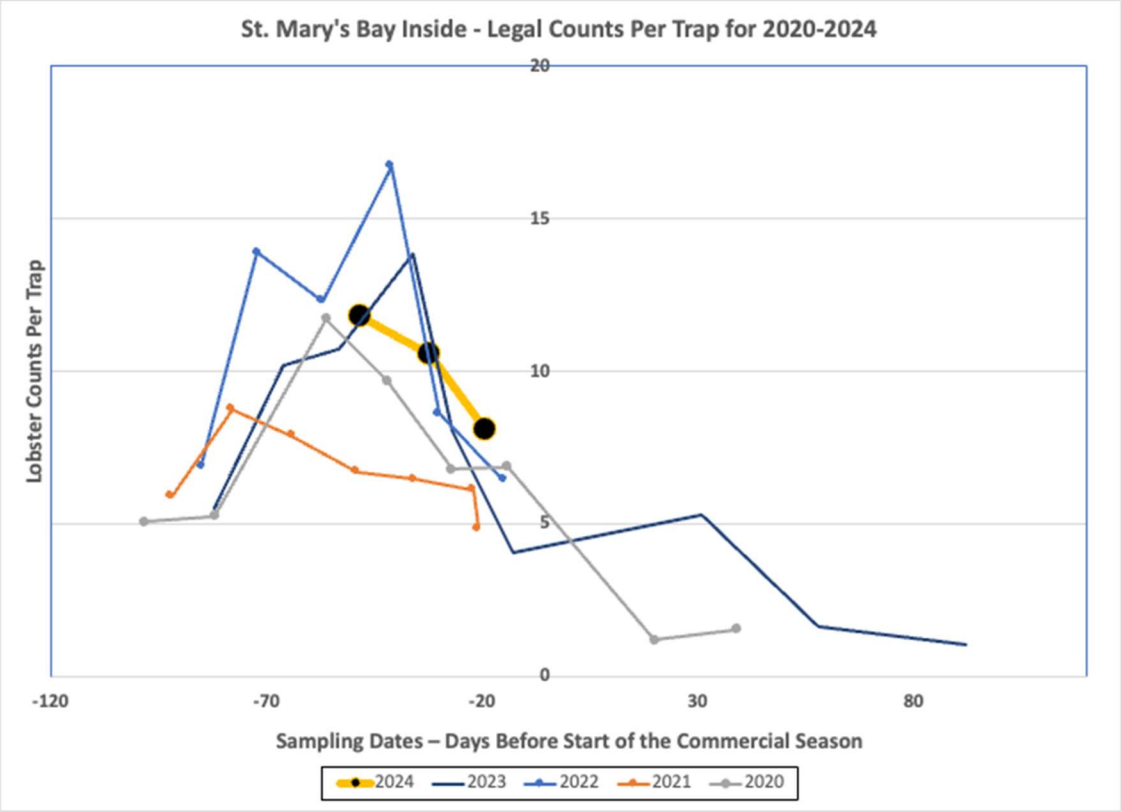
(B) Blood Protein (BRIX) Categories – Annual Samples 3-4 weeks before season start

From the figure below, annual samples 3-4 weeks from the start of each commercial harvest season opening are somewhat variable across the series from 2016 to 2024 for Yarmouth Inside. The 2024 sample (October 24) has the lowest BRIX average (8.04 mg/mL) in the series. The October 24, 2024 sample is most closely comparable to the October 30, 2018 sample.



(C) Counts (legal-sized) per trap for 2024 samples

In the figure below, the counts per trap of lobsters (male and female) of legal-sized (82.5 mm or greater) that occurred in the survey samples dates in 2024 (thick yellow line) are compared to past years' samples (2020-2023). The counts for St. Mary's Bay Inside are generally above the previous years' counts. The characteristic time series of counts over the preseason in St. Mary's Bay Inside exhibit a rise toward end- October and then a fall (by 50+%) to the end of the sampling period (mid-November). As evidenced by the 2020 in-season sampling in the figure below, commercial catch rates are expected to fall precipitously after the beginning of the commercial season as legal sized lobster abundance is extracted.



Counts of weak lobsters in the 2024 St. Mary's Bay Inside samples (8.67%) were below 2023 values (13.3%) and 2022 values (11.4%) but greater than the past years (2020-2021) values for weak percent in samples of 6% and 4% respectively.

ST. MARY'S BAY INSIDE– Summary

1) St***. Mary's Bay Inside samples show a constant average BRIX at moderately low levels of 8.0 mg/mL. "Good" BRIX category levels remained relatively constant around 30-37% while the proportion of "Poor" lobsters sampled in St. Mary's Bay Inside did not exceed 18% throughout. Average BRIX level values in 2024 (7.96 mg/mL) were below 2023 values (9.68).***

2) St. Mary's Bay Inside Lobster Quality Category for 2024 samples are classified as "Moderately-Low" (ML). It is expected that average BRIX levels will be maintained into December 2024 as lobster move from post moult to premoult status over the winter. The 2024 sample is directly comparable to the 2018 sample.

3) St. Mary's Bay Inside sampling counts are exceed past years' survey catch counts. It is anticipated that St. Mary's Bay Inside initial commercial catch rates will slightly improve in the 2024-2025 commercial season.

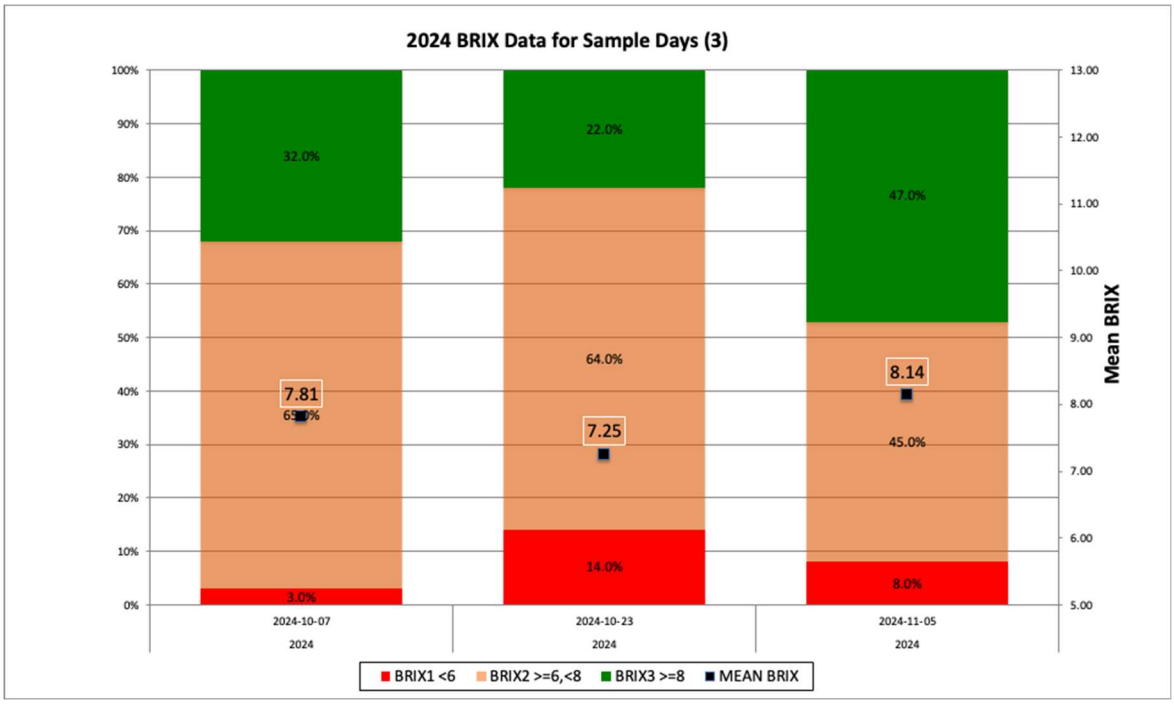
4) St. Mary's Bay Inside Weaks (8.67%) were below 2023 and 2022 values (13.3%, 11.4%) but greater than the past years (2020-2021) values.

ST. MARY'S BAY OUTSIDE

2024 SUMMARY OF RESULTS

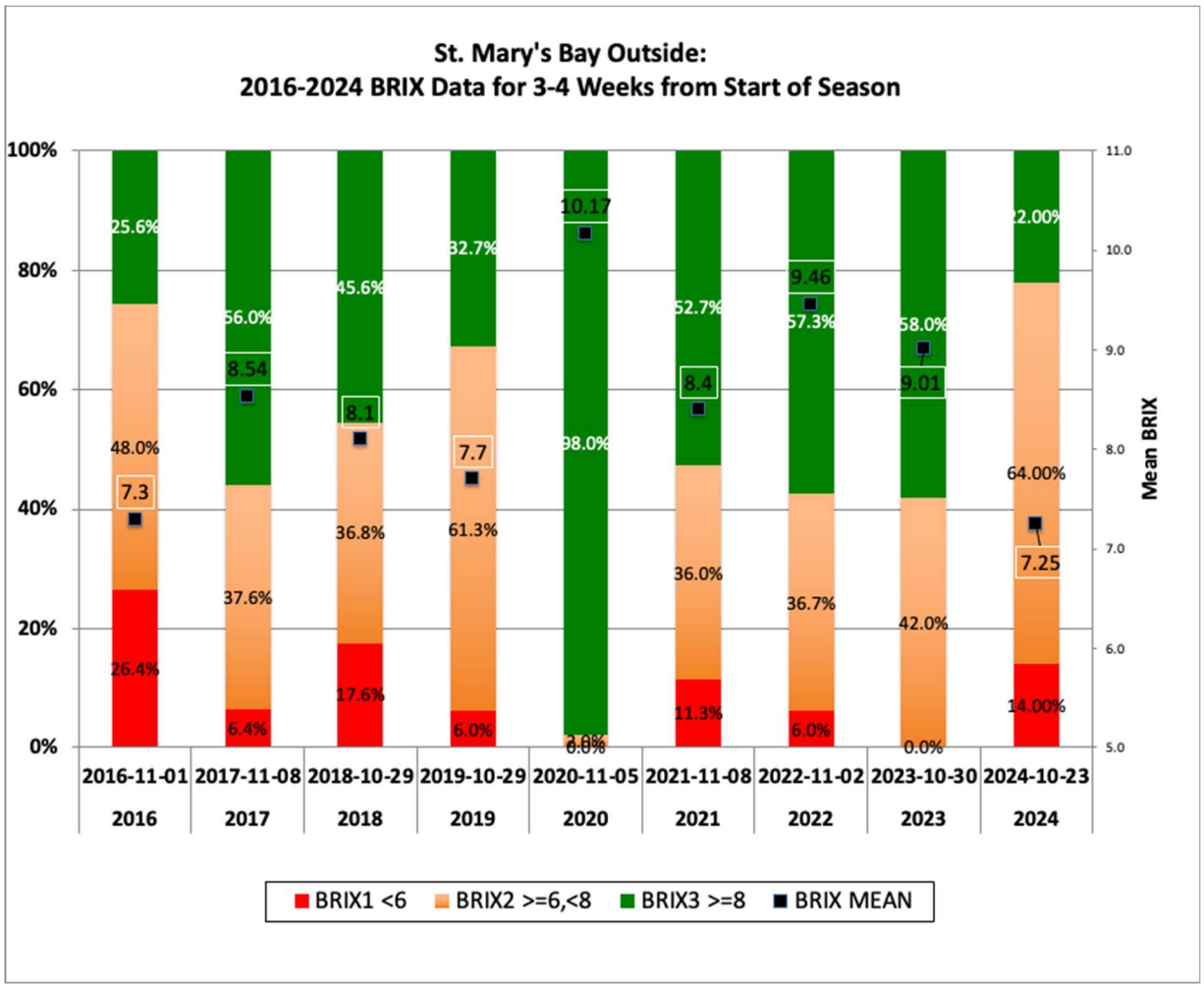
(A) Blood Protein (BRIX) Categories–2024Samples

In the figure below, 2024 preseason survey results for 3 sample sites in St. Mary's Bay Outside show a relatively constant average BRIX ranging from a low of 7.81 mg/mL (October 7 sample) to the high of 8.14 mg/mL at the ending early-November sample. BRIX category levels shifted with samples attaining 22-47% "Good" levels for BRIX (≥8mg/mL) over the sampling period. The proportion of "Poor" lobsters (BRIX<6 mg/mL) sampled in St. Mary's Bay Outside did not exceed 14% for all samples. Average BRIX level values for samples in 2024 (7.73 mg/mL) lag behind values for all past years: 2023 (9.07), 2022 (9.21), 2021 (8.4), and 2020 (8.65).



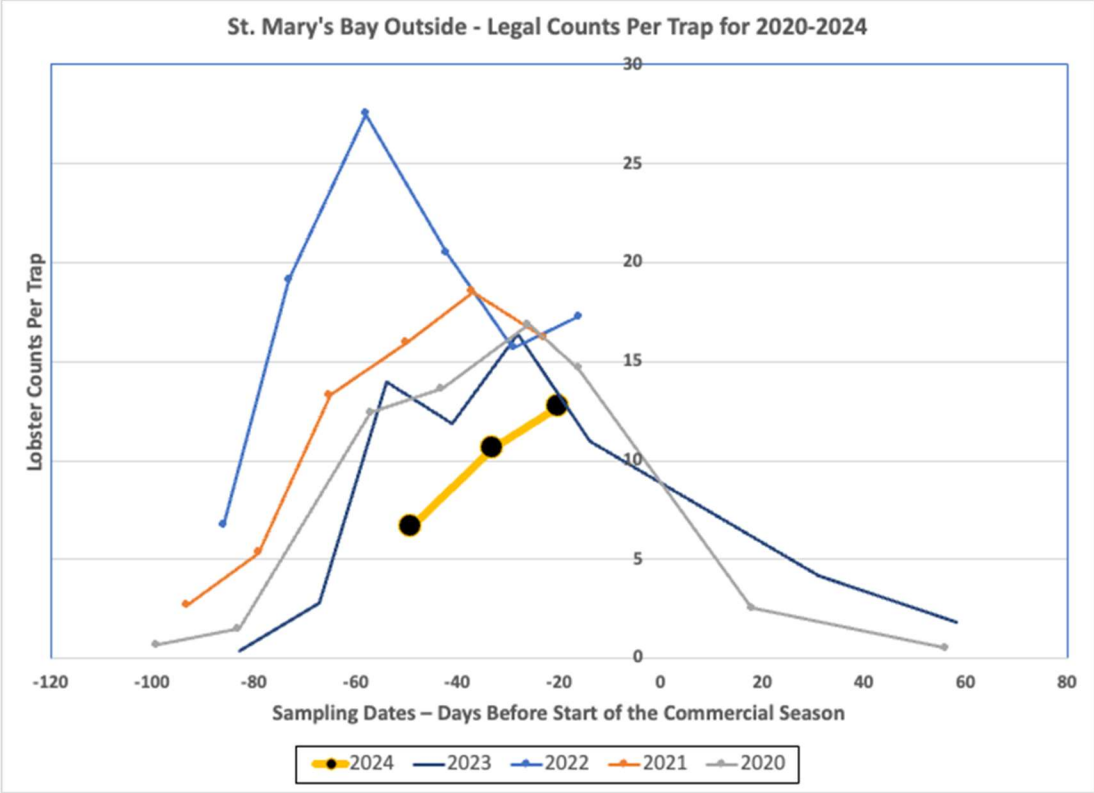
(B) Blood Protein (BRIX) Categories – Annual Samples 3-4 weeks before season start

From the figure below, annual samples 3-4 weeks from the start of each commercial harvest season opening are somewhat variable across the series from 2016 to 2024 for St. Mary's Bay Outside. The 2024 sample (October 23) has the lowest BRIX average (7.25 mg/mL) in the series.



(C) Counts (legal-sized) per trap for 2024 samples

In the figure below, the counts per trap of lobsters (male and female) of legal-sized (82.5 mm or greater) that occurred in the survey samples dates in 2024 (thick yellow line) are compared to past years' samples (2020-2023). The counts for St. Mary's Bay Outside are the lowest in the time series for comparable dates prior to season opening. The 2024 counts do exhibit the characteristic time series of counts over the preseason showing an initial rise toward end-October and then a fall to the end of the sampling period (mid- November). As evidenced by the 2020 in-season sampling for St. Mary's Bay Outside in the figure below, commercial catch rates are expected to fall precipitously after the beginning of the commercial season as legal sized lobster abundance is extracted.



Counts of weak lobsters in the 2024 St. Mary's Bay Outside samples (5.00%) are below the 2023 weaks (11.7%) and the 2022 weak values (17.3%) but greater than the weaks for 2020 in samples of 3.7% respectively.

ST. MARY'S BAY OUTSIDE– Summary

1) St. Mary's Bay Outside samples exhibit a constant average BRIX over the sampling period. "Good" levels for BRIX range between 22 and 47% while "Poor" lobsters did not exceed 18% for all samples. Average BRIX level values of 7.73 mg/mL are the lowest in the time series.

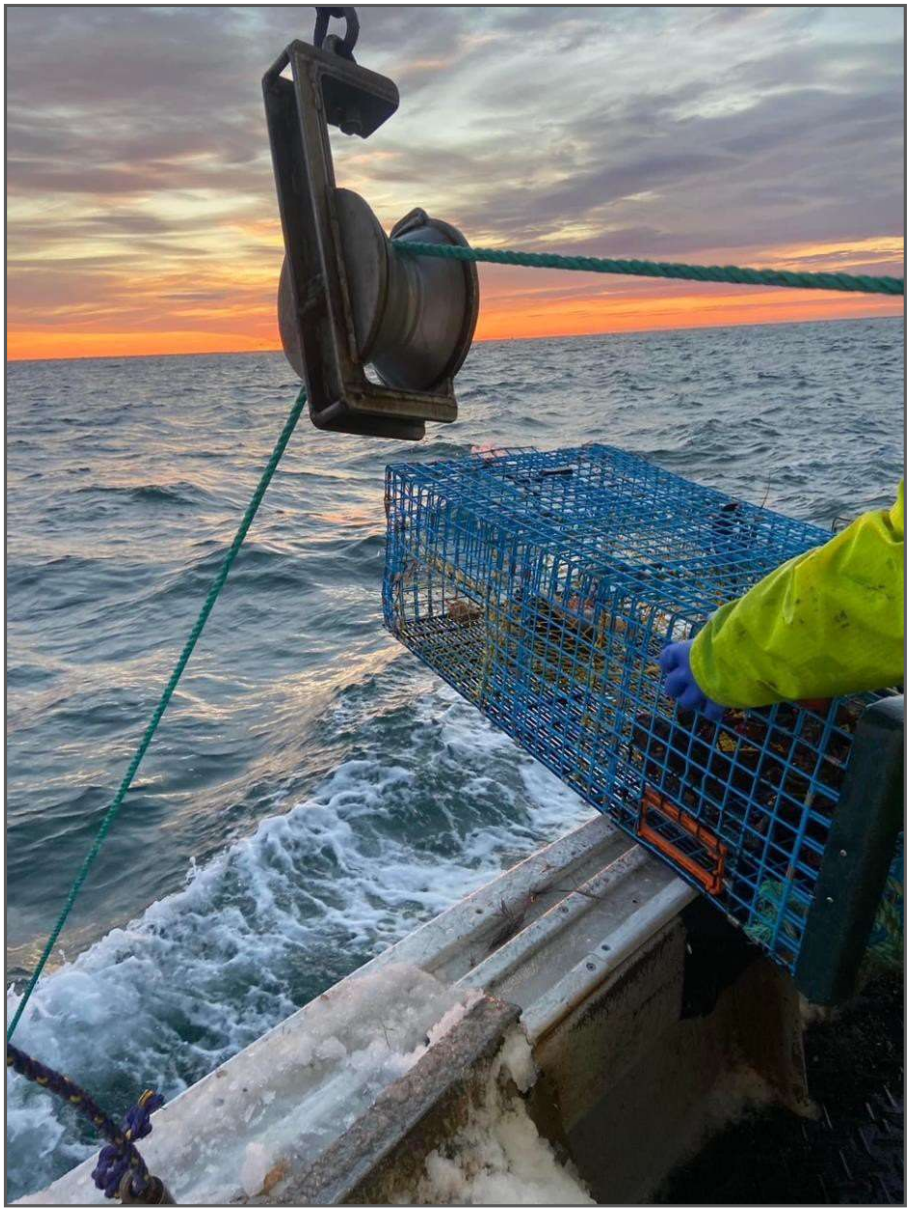
2) St. Mary's Bay Outside Lobster Quality Category for 2024 samples are classified as "Moderately-Low" (ML). It is expected that favorable BRIX will be maintained into December 2024 as lobster move from post moult to premoult status over the winter.

3) St. Mary's Bay Outside counts are the lowest in the time series for comparable dates prior to season opening. It is anticipated that St. Mary's Bay Outside initial commercial catch rates will be lower compared to recent years and similar to 2023 catches.

4) St. Mary's Bay Outside Weaks (5%) are below the 2023 (11.7%) and the 2022 weak values (17.3%) but greater than the weaks for 2020 in samples of 3.7%.

Acknowledgements

Coldwater Lobster Association and Université Sainte-Anne wish to thank all participants in, and contributors to the 2024 Preseason Lobster Moult & Quality Survey. Your commitment to this scientific task is commendable. We appreciate and thank all of you for your continued support and improvement of this important scientific study for the benefit of the lobster sector in southwest Nova Scotia. To those about to embark on another lobster season in LFAs 33 and 34, here's to calm waters, a prosperous season, and stable international and domestic markets. Stay safe and watch out for one another.



Contact:

Centre sur la qualité du homard (CQH)/
Lobster Quality Centre (LQC)
Centre de recherche marine, Université Sainte-Anne
3433 route 206, Petit de Grat,
Nouvelle-Écosse B0E 2L0 (902)
295-8095

Email : Daniel.Lane@uSainteAnne.ca
Website: https://www.usainteanne.ca/recherche/unites/cqh

Contact:

Coldwater Lobster Association 368 Main Street, Suite 105 Yarmouth, NS, B5A 1E9 (902) 742– 5247

Email: coldwaterlobster@gmail.com
Website: www.coldwaterlobster.ca

-30-