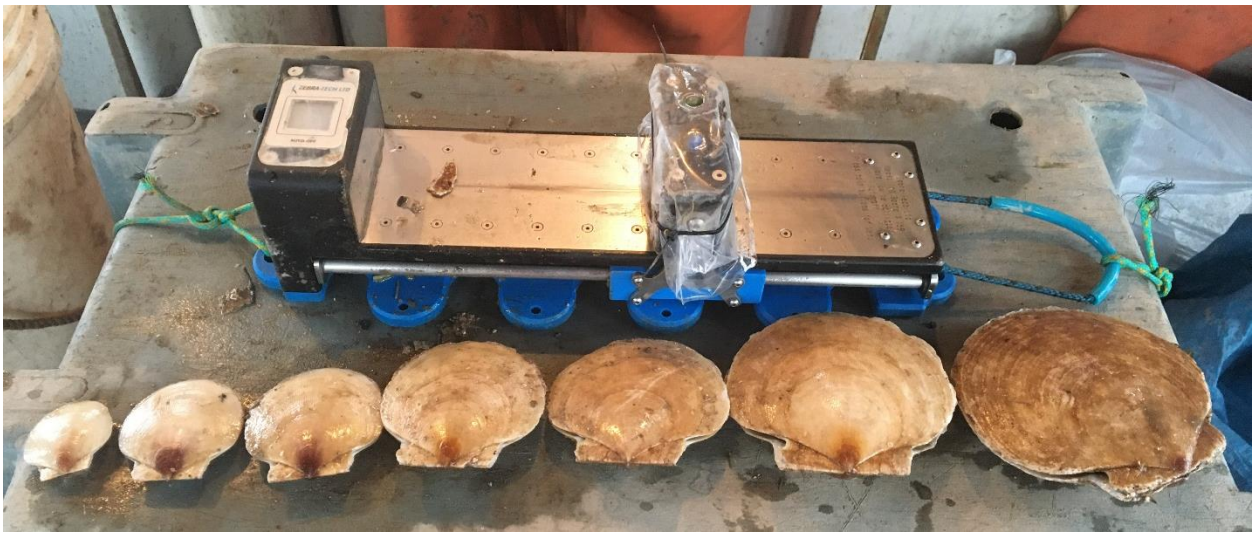
2023 Zone 3 Scallop Survey Report

Maine Department of Marine Resources



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2023 Zone 3 Scallop Survey Report

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Zone 3 Scallop Survey Methods

Each fall, prior to the opening of the scallop season, Zone 3 (Cobscook Bay) is surveyed to estimate the density and evaluate the size distribution of these scallops. The 2023 Fall Scallop Survey sampled 93 stations between November 10th and the 13th, 2023, aboard the F/V Lady Samanth II (Fig 1). These stations are randomly selected each year from our survey grid of 223 possible stations. Each station was sampled following the same methods used since 2016 with our standardized 7-foot survey drag, rigged with 2-inch rings and a 5-inch twine top. At each station, the drag is towed for a target time of 2.5 minutes covering approximately 300m (0.16 nautical miles). The total volume and composition of the catch are recorded, then the scallops are counted and measured. For each area, a representative sample of the scallops is selected for meat weights and quality measurements during which the scallops are visually screened for specific diseases or abnormalities.

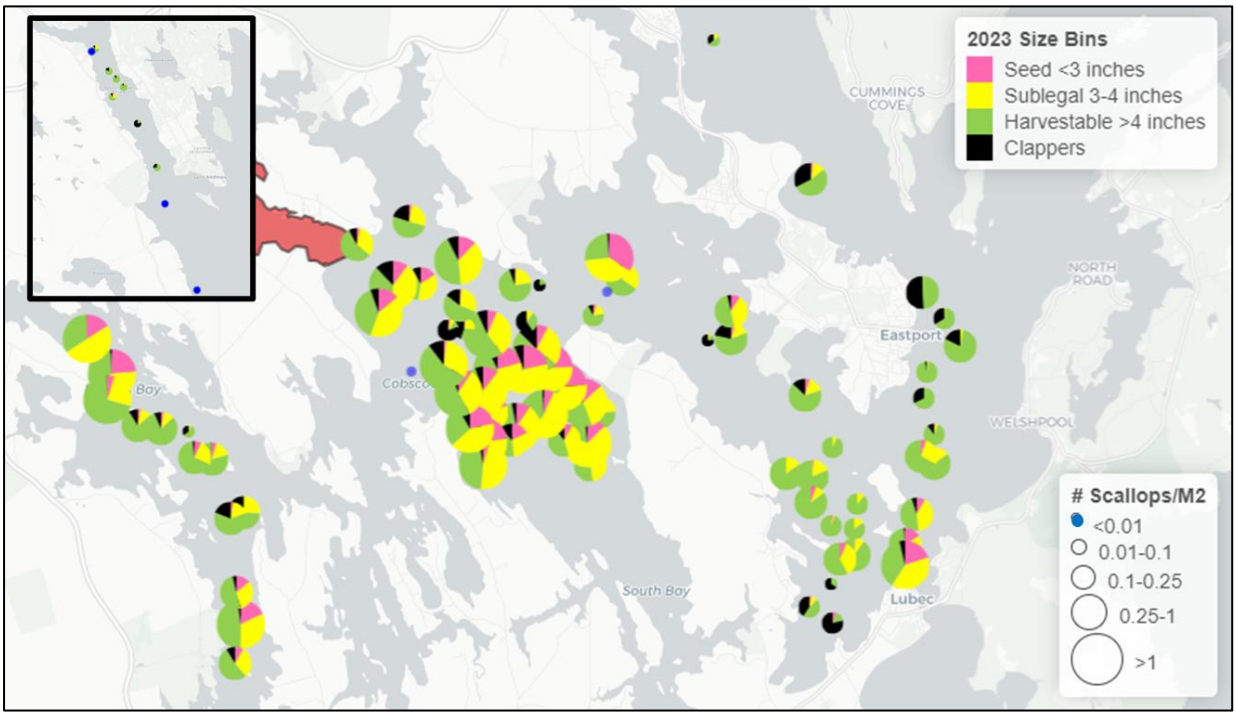

Figure 1. *Map of the Fall 2023 Survey results. The size for the circle represents the number of scallops caught at each site, and the proportion of each size class is represented by the color of the circle (pink-seed (less than 3 inches) yellow-sublegal (3 to 4 inches), green-harvestable scallops (larger than 4 inches) black-clappers). The insert at the top left is the northern part of the Saint Croix River.*

To monitor the fishing pressure these stations are resampled during the fishing season using these same methods, except no samples are processed for meat weight relationships during in season surveys. For more information on the sampling details contact the DMR Scallop Research Program.

2023 Zone 3 Preseason Survey Summary

In 2023, the total number and weight of scallops was the lowest of the past six years of this survey with a steady decline observed since 2021 (Fig 2). The abundance of seed scallops has remained relatively low since 2020, corresponding to a decrease in the sublegal scallops in the last two years. The 2023 Fall Cobscook Survey had the fewest high-density stations (more than 1 scallop/m^2) since 2018, and the most stations with less than 0.25 scallops/m^2 (Fig 3). This decline and below average sublegal catch are the primary reasons why management was conservative for the 2023-2024 fishing season, closing the main bay after only 23 days of fishing.

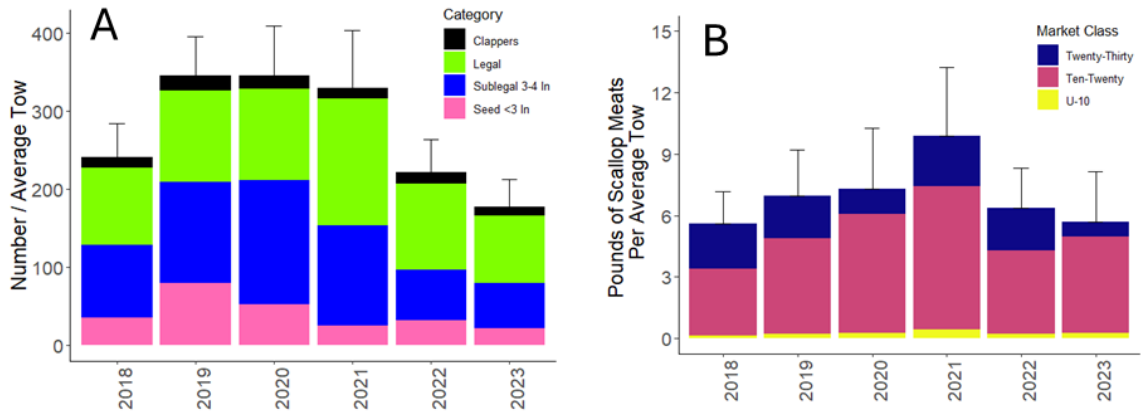

Figure 2*. The height of each bar in the left figure (A) represents the average number of scallops caught for all tows of the past six annual fall surveys in Zone 3 (excluding the Saint Croix River). The color represents the size class of the shell, where pink are seed scallops <3 inches, blue are sublegal scallops between 3 and 4 inches, and green are legal scallops >4 inches. The height of each bar in the right figure (B) is the average annual estimated weight of scallop meat market class caught per tow for the past six surveys in Zone 3. The color represents the proportion of each market class.*

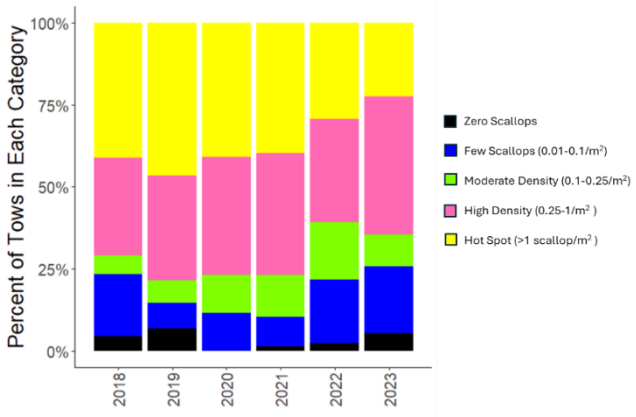

Figure 3. *The percentage of survey tows catching zero (black), few (0.01-0.1 scallop/m^2 = blue), moderate (0.1-0.25 scallop/m^2 = green), high (0.25-1 scallop/m^2 = pink), or highest abundance (>1 scallop/m^2 = yellow) of scallops for the past six years in Zone 3.*

2023-2024 Zone 3 End of Season Summary

During the 2023-2024 fishing year, two additional surveys occurred to monitor the fishing pressure, the first January 5th-7th, after 14 days of fishing, and the second February 2nd-4th, after the main bay was closed with 23 total days of fishing. The January in-season survey did not detect a change in the abundance or size distribution of scallops. The end of the season survey observed a decrease of legal scallops throughout Cobscook Bay, with the largest decrease of legal scallops in South Bay of 81% (Fig 4). The majority of scallops in South Bay at the end of the season were sublegal and newly cut sublegal shells were observed throughout South Bay (Fig 5).

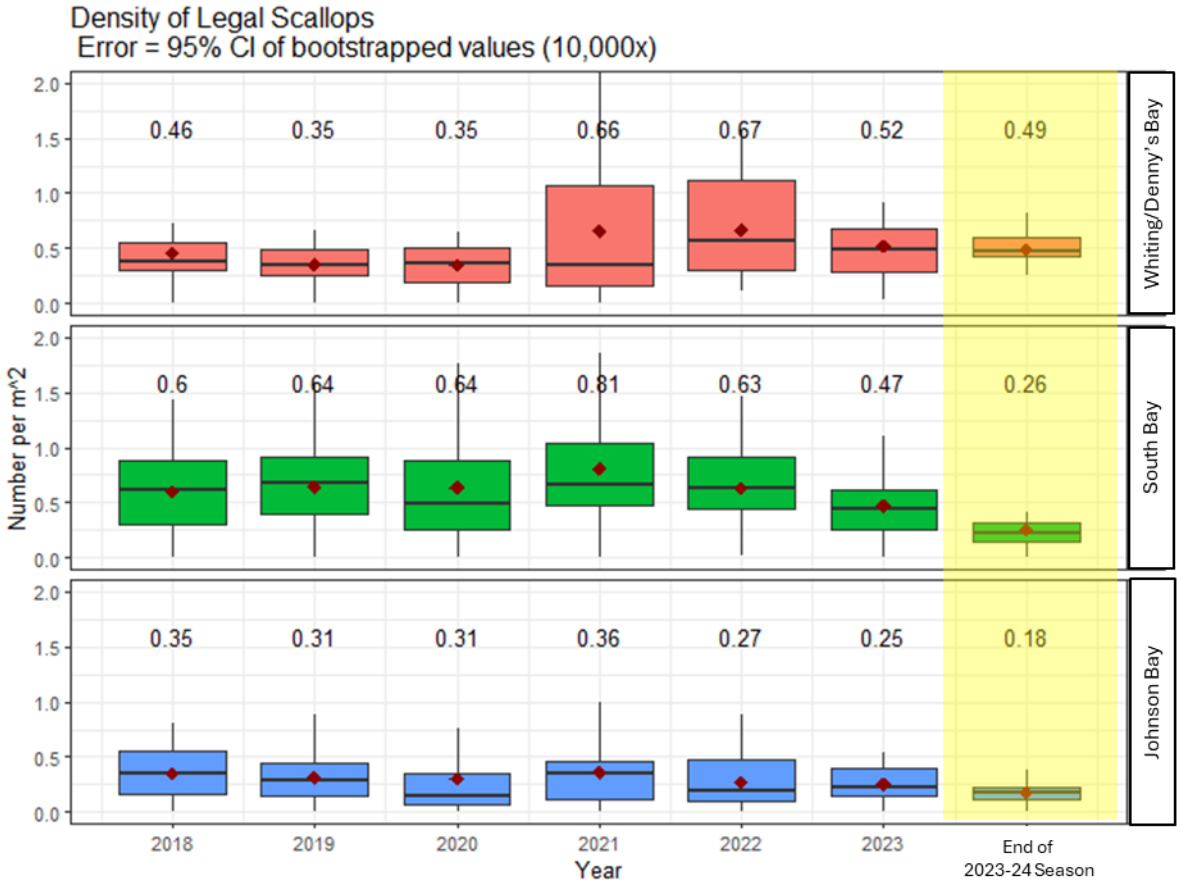

Figure 4. *Density of legal scallops by areas within Cobscook Bay for each year for the Fall Cobscook Scallop Survey and the end of the 2023-2024 season survey (yellow highlight) for Zone 3. The labels are the average number of legal scallops per square meter. The black lines represent the 95% confidence interval from the bootstrapped values.*

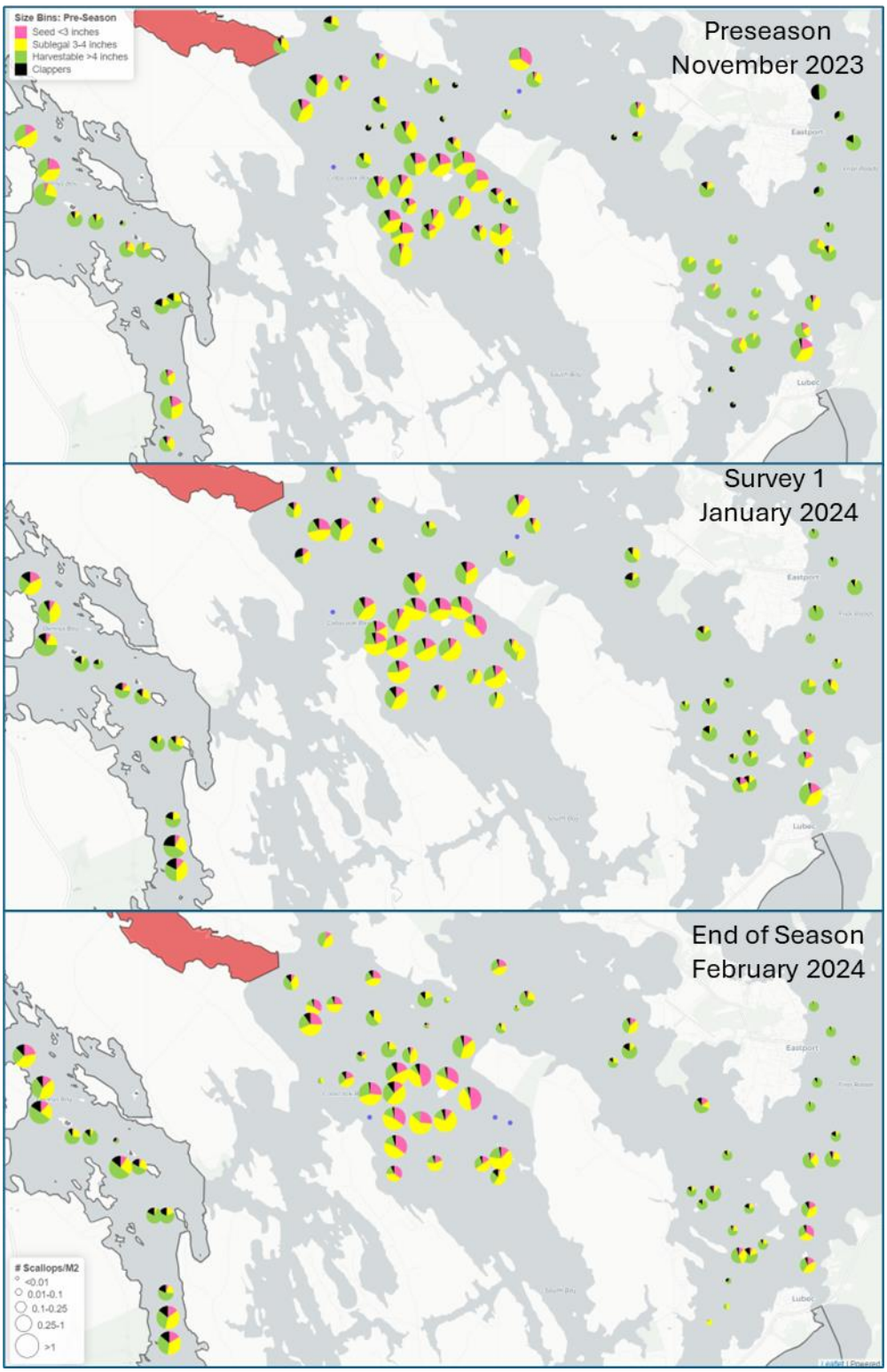

Figure 5. *Map of the in-season surveys with the preseason survey on the top, survey 1 (Jan 5-7th) then the end of season survey on bottom (Feb 2-4th). The size for the circle represents the number of scallops caught at each site, and the proportion of each size class is represented by the color of the circle (pink-seed (< 4 in) yellow-sublegal (3-4 in), green-harvestable scallops (>4 in).*

Whiting Bay/Dennys bay

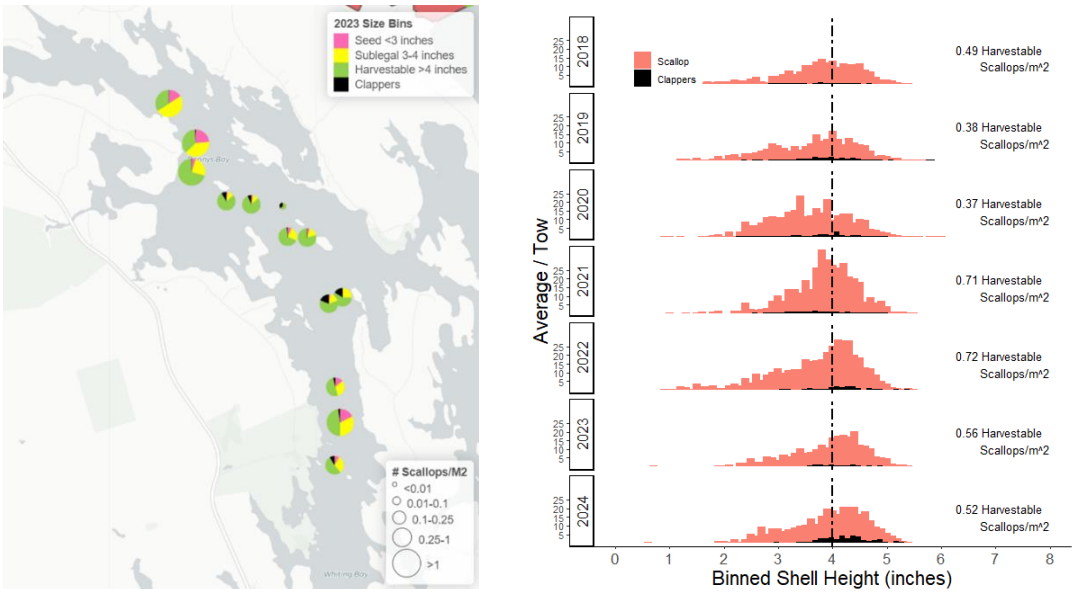

Figure 6. *Map of the stations sampled in Whiting and Dennys Bays for the 2023 preseason Fall Survey (left). Annual survey average size frequency of scallops (orange) and clappers (black), labeled with the average density of legal scallops (right). The 2024 data is from the end of the 2023-2024 survey.*

In Whiting Bay/Dennys Bay, scallops were caught at every station with the majority in the four to five inch range. There was a decrease in catch from 2022, but there were more scallops greater than five inches. The abundance of clappers was higher here than in other areas surveyed, but there was a noticeable difference between the years. The clappers were evenly distributed across the size range. There was a slight decline in abundance observed during the end of the 23-24 season survey compared to the 2023 preseason.

South and East Bay

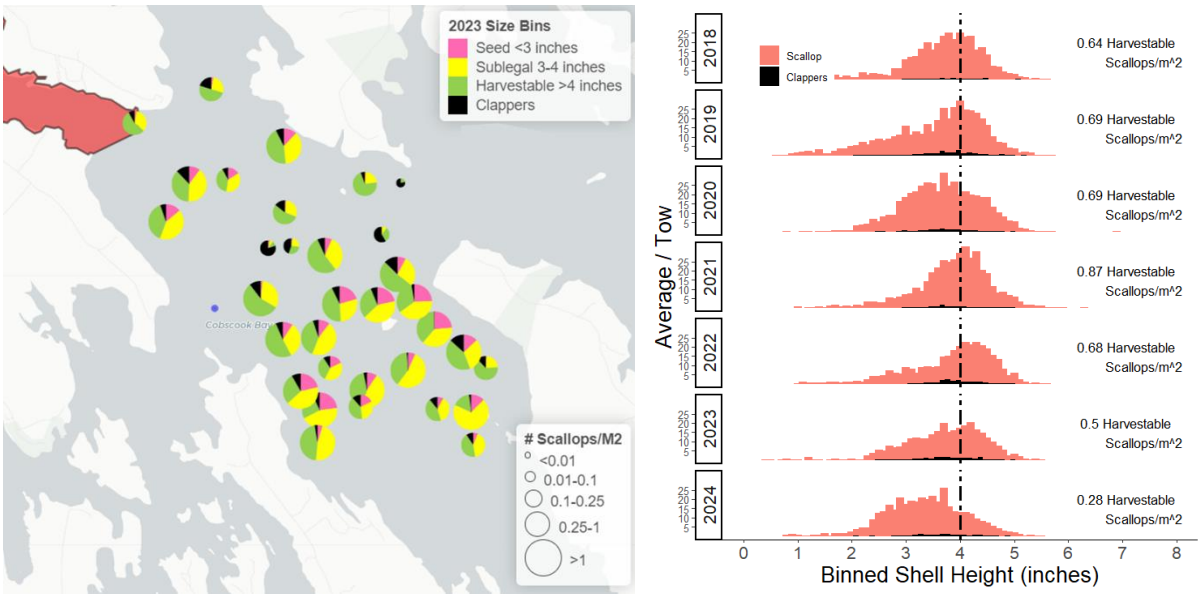

Figure 7. *Map of the stations sampled in South and East Bay for the 2023 preseason Fall Survey (left). Annual survey average size frequency of scallops (orange) and clappers (black), labeled with the average density of legal scallops (right). The 2024 data is from the end of the 2023-2024 survey.*

In the South and East Bay areas, scallops were caught at every station except for one with most stations estimating densities higher than 1 scallop per meter. Most of these scallops fell in the 3-5 in range. This area had more seed than other areas sampled. The number of seed scallops, smaller than the 2-inch rings, increased this year to similar levels observed in 2018. The increase of small scallops in the end of season survey is likely due to higher catchability of the small scallops due to more shell and fewer large scallops. The catch of legal scallops peaked in 2021 and has been steadily declining to the lowest value observed since 2018. Compared to the 2023 preseason survey the end of 2023-2024 season survey in February showed a significant decrease of the legal scallops and a decrease of the scallops just under legal size suggesting fishery removals of the sublegal scallops.

Johnson Bay/Breakwater

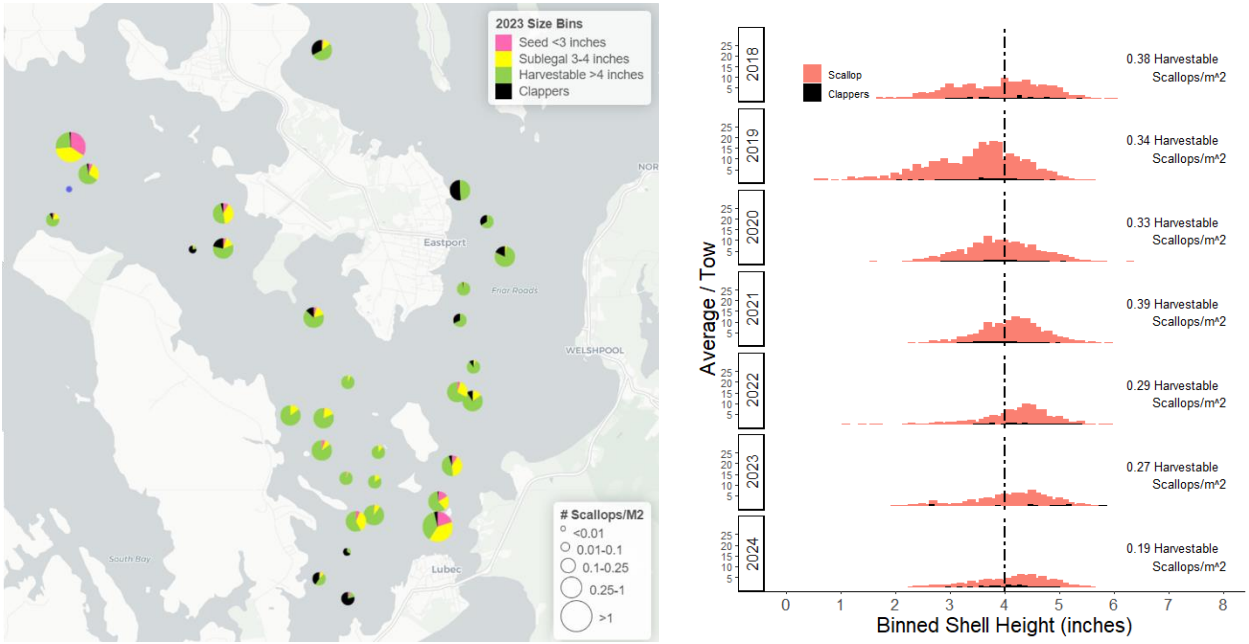

Figure 8. *Map of the stations sampled in Johnson Bay for the 2023 preseason Fall Survey (left). Annual survey average size frequency of scallops (orange) and clappers (black), labeled with the average density of legal scallops (right). The 2024 data is from the end of the 2023-2024 survey.*

The catch of legal scallops has remained relatively steady in the Johnson Bay area of the Fall Survey since 2018, despite being low compared to other areas in Zone 3. During this Fall Survey, we observed some high-density tows with a good amount of seed. The meat yield calculated during this survey was the highest that it has been since 2018. There was a notable decline (42%) in the catch of legal scallops during the end of the 23-24 season survey and no noticeable change to the sublegal scallops.

Saint Croix River

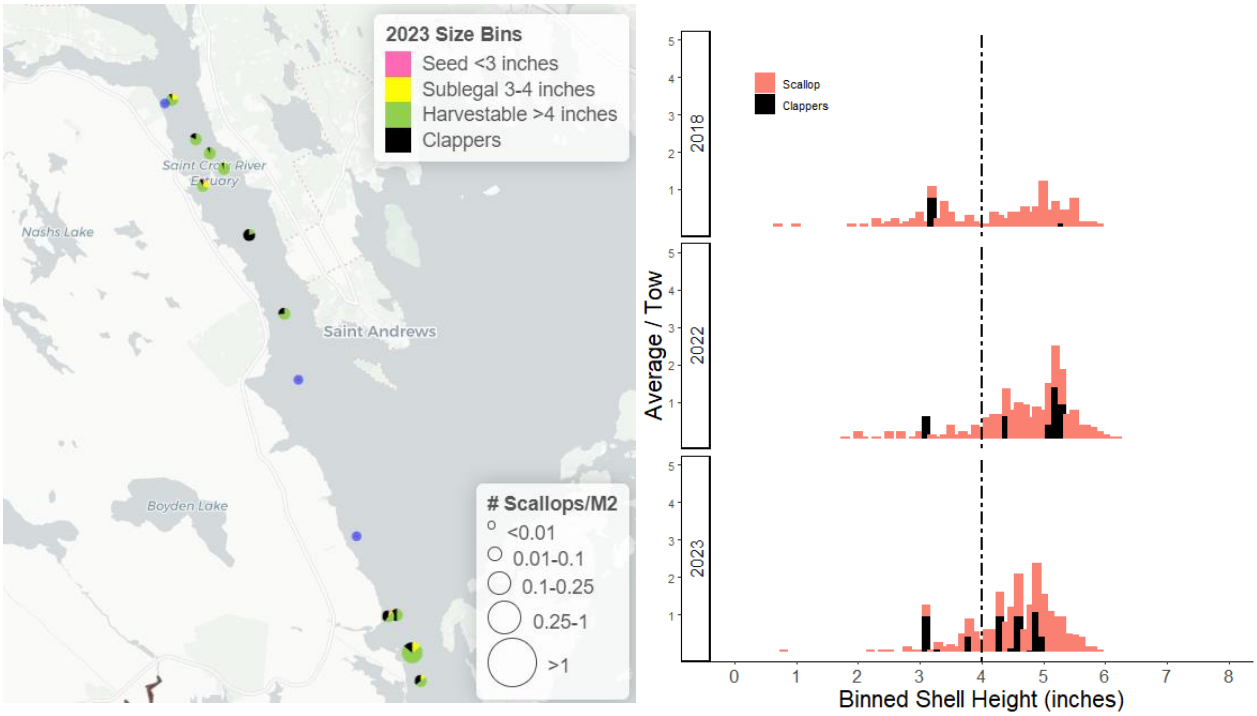

Figure 9. *Map of the stations sampled in the Saint Croix River for the 2023 preseason Fall Survey (left). Annual survey average size frequency of scallops (orange) and clappers (black), labeled with the average density of legal scallops (right).*

The Saint Croix River has had low scallop densities for the history of this survey. This area is not sampled in all years. In the St Croix, scallops were caught at 12 of the 15 survey sites with 10 of those sites having a low abundance of scallops. However, the scallops captured were on the larger side with most falling into the 4.5 to 5.5 inch range. The abundance of scallops has remained consistent over survey years where the highest relative densities are in the upper river and near Pleasant Point.