

Abundance and residence time

We can plot the abundance of each species over the surveyed weeks for each year. This will highlight any obvious trends in residence time. We will use a raster approach, where every cell indicates the abundance of a particular species in a certain week of a year. Gray raster cells indicate that there was no catch for that species at any sampled site in that week. Clear raster cells indicate that there was no sampling conducted in that week. The remainder of the color scale indicates abundance, with low abundance being purple and high abundance being yellow. The first plot will force the same color scale across all species to also indicate relative abundance to each other. The second plot will force a unique color gradient for each species, which allows for closer examination of residence time and interannual abundance for each species.

A few things pop out here. Atlantic silversides have been identified in every sampling week of the survey. They are one of the most-abundant organisms, as evidenced by the predominance of warmer colors in the first plot. They seem to have seasonal recruitment to the gear due to either individual growth or movement into the inshore area, with more silversides caught in the later weeks of each year. Having pulled more than my fair share of very small silversides out of the seine mesh (which acts like a gillnet when they are that size), I'm inclined to say it's probably mostly individual growth. Their abundance relative to other organisms has not changed much over the years of the survey, though 2016 and 2020 had weeks with very high abundance.

Only one week out of all sampling did not produce at least one green crab. Green crab abundance relative to other organisms has not changed much over the years of the survey. It also has not changed much seasonally.

Winter flounder are also seen fairly often. Though they do not have any obvious seasonal or interannual trends in relative abundance, their peak abundance occurred mid-summer in 2016.

Mummichogs are caught more consistently and at higher abundances in the later weeks of the season. They have some inter-annual variation, with higher relative abundance in 2015-2016 than all other years.

Atlantic herring and tomcod have clear seasonal trends of abundance in the study area. For both species, abundance is highest in the earlier weeks of the season. Herring, which often form very large schools, have the highest single-week abundance of all 8 species, which occurred in mid-2014. Both herring and tomcod appear to leave the study area by late July.

There are no clear trends of abundance or residence time for sandlance and alewife. Both have high interannual variability and a peak abundance in mid-summer 2014.



