

IFCB Phytoplankton Community Size Structure

Skill Goals:

1. Identify common coastal phytoplankton species from Imaging Flow CytoBot data.
2. Construct size distribution by classification.

Conceptual Objectives:

1. Phytoplankton community composition and succession.
2. Consider how cell size, classification impact inherent optical properties

Activity:

- Each group will receive a print out of all the images from a sample collected close to noon on the first day of the month starting in December 2020.
- Look through and begin to identify the most common species.
- Get out your scissors. Cut out the images and sort them into taxonomic groups based on their distinguishable features. For the very small cells that are difficult to identify, simply cut the mosaic into 2-inch strips. These will be “unclassified nanoplankton”.
- Once you have your images grouped by like classification, rank the groups from largest cells to smallest cells. Figure out how many groups you have been able to distinguish.
- Confer with the other groups to see if you all have identified the same groups. Once you have compared, determine the total number of phytoplankton groups across all the months, and rank them by size.
- Draw 2-inch “bins” along the x-axis of your poster paper. Label each bin on the x-axis with the complete list of phytoplankton groups, ranked smallest cells to largest (“unclassified nanoplankton” will be the first bin from left to right. ***Again, ensure each group has the same order of species on the x-axis, even if you don’t have any in your particular sample.***
- Tape your images into their bin along the x-axis.
- The result will be a histogram in the format of a size distribution.

Things to consider:

- These histograms provide a robust visualization of variability in community structure and biovolume
- How would you determine:
 - Number distribution (number vs taxon or number vs size)
 - Biovolume distribution (total cell volume vs taxon or vs size)
 - An estimate of phytoplankton carbon
- Later we will consider how to look at these samples with respect to variations in absorption and scattering coefficients