

Lower Deschutes River Periphyton Biovolume Estimate Error



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by

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In the spring of 2020 during a review of additional analyses being conducted on the Lower Deschutes River data collected by Portland General Electric from 2015 to 2017 Rhithron Phycologists noticed abnormally high biovolume values for a few taxa. Upon review of the data and photomicrographs of said taxa taken during sample processing he determined that a few taxa were incorrectly measured by the initial Rhithron taxonomist, and the biovolume estimates were larger than would be expected. Four taxa were determined to be out of the range of a given taxon: *Gongrosira*, *Chlorogloea*, *Rivularia*, and an undetermined Stigonemataceae, these four taxa occur in 8.13%, 6.09%, 36.58% and 17.88% of samples respectively.

The taxonomist who made these initial taxa measurements is unavailable and no longer employed by Rhithron; however, given the magnitude of overestimate we presume that the measurements were made on the whole natural counting unit and not the cell dimensions. Biovolume estimates are calculated by multiplying the number of cells from a given taxon by the average cell biovolume. Measuring the natural counting unit for a biovolume estimate results in an overestimation of biovolume on the scale observed with these four taxa (Figure 1).

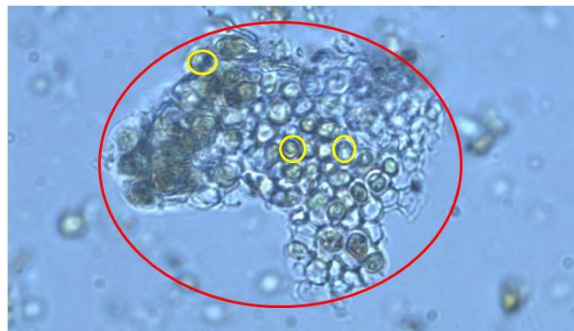


Figure 1: One Natural Counting Unit (NCU) of *Chlorogloea* (Cyanophyta) observed from the Lower Deschutes River (Reregulating Dam site (LDR01)) collected in August of 2015. The area bounded by the red represents the approximate size of the NCU, and the yellow circles represent the approximate size of individual cells.

On June 8th, 2020, Rhithron Phycologists reexamined the photomicrographs and were able to determine appropriate cell dimensions for the taxa of concern using the Leica Image Suite software, and re calculated an average biovolume of cells for the taxa of concern. Data were recalculated for all periphyton data delivered to PGE from 2015 to present and delivered electronically to the project manager.