

Quantitative and Qualitative Analysis of DOM Produced by Periphyton and the Mercury-DOM Complexes in the Everglades

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Goals

- DOM characterization from periphyton in the Everglades
- Comparison of DOM from periphyton and in Everglades water
- Analysis of Hg speciation in the presence of periphyton DOM



Figure 1. Periphyton Mat at Everglades National Park

Research Methodology

- Collection of periphyton and water samples from the Everglades
- Measurement of dissolved organic carbon content by using total organic carbon analyzer for quantitative analysis
- Utilization of fluorescence spectroscopy for qualitative characterization of DOM
- Analysis of Hg-DOM complexes

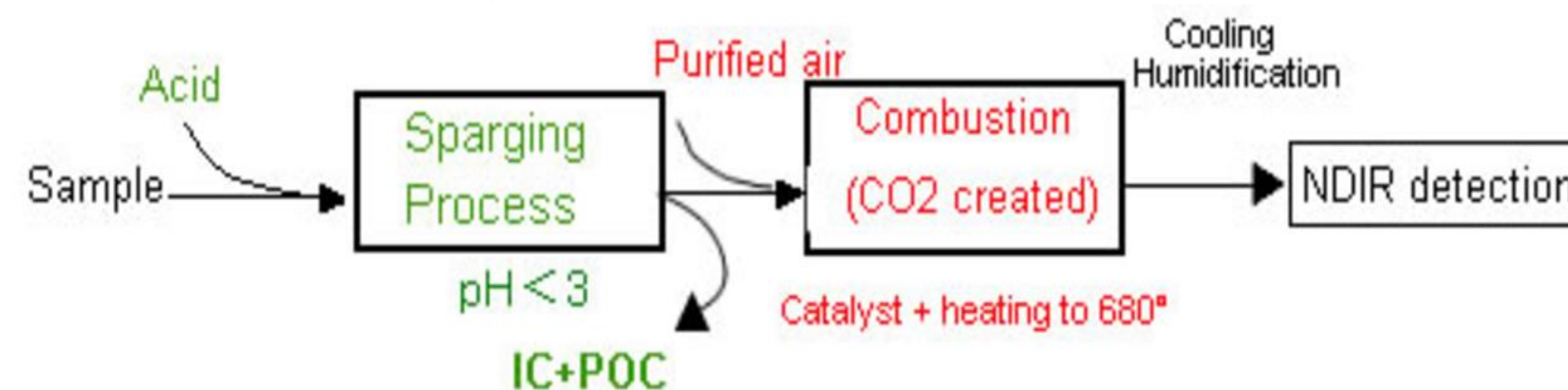


Figure 2. Experimental methodology to measure DOC content using a TOC analyzer

A schematic of spectrofluorometer

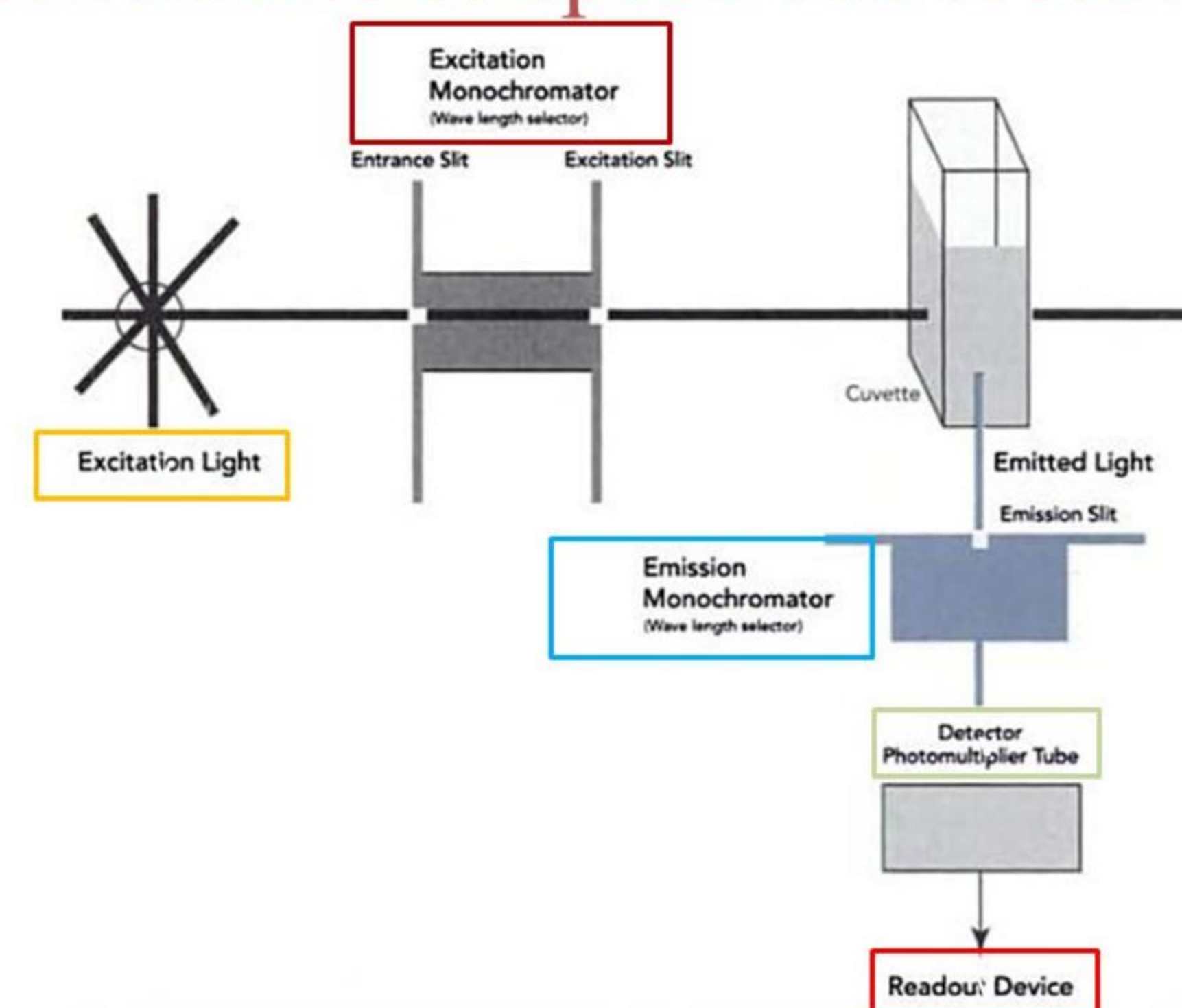


Figure 3. A schematic of a spectrofluorometer

Results

- Optical properties of fluorescence analysis will provide information on DOM sources, types, and reactivity.
- Measurement of time- and distance-dependent DOC percolated from periphyton will determine DOM percolation rates
- Analysis of Hg-DOM complexes will reveal the effects of periphyton on Hg speciation

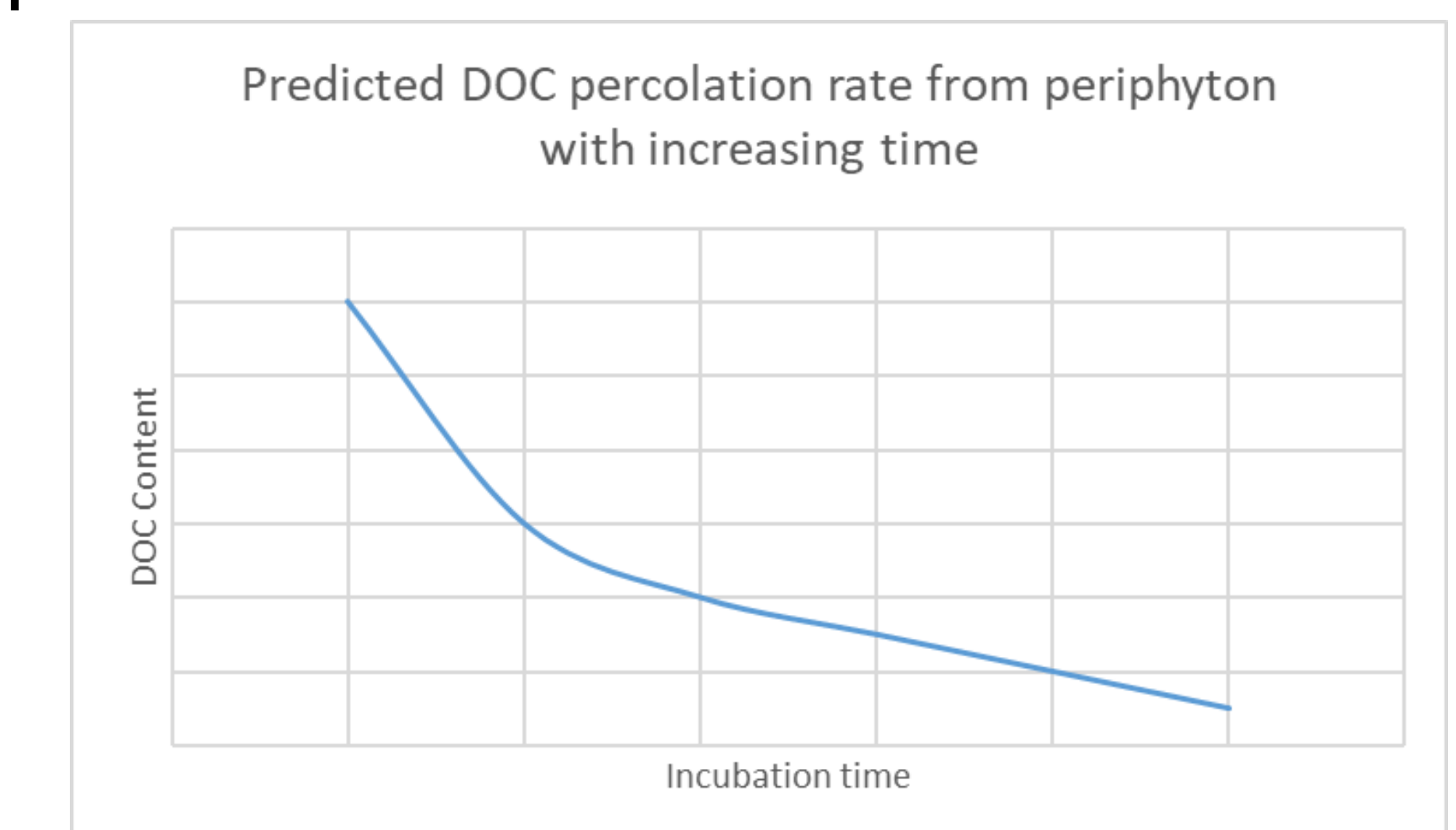


Figure 4. DOC percolation rate from periphyton with increasing time

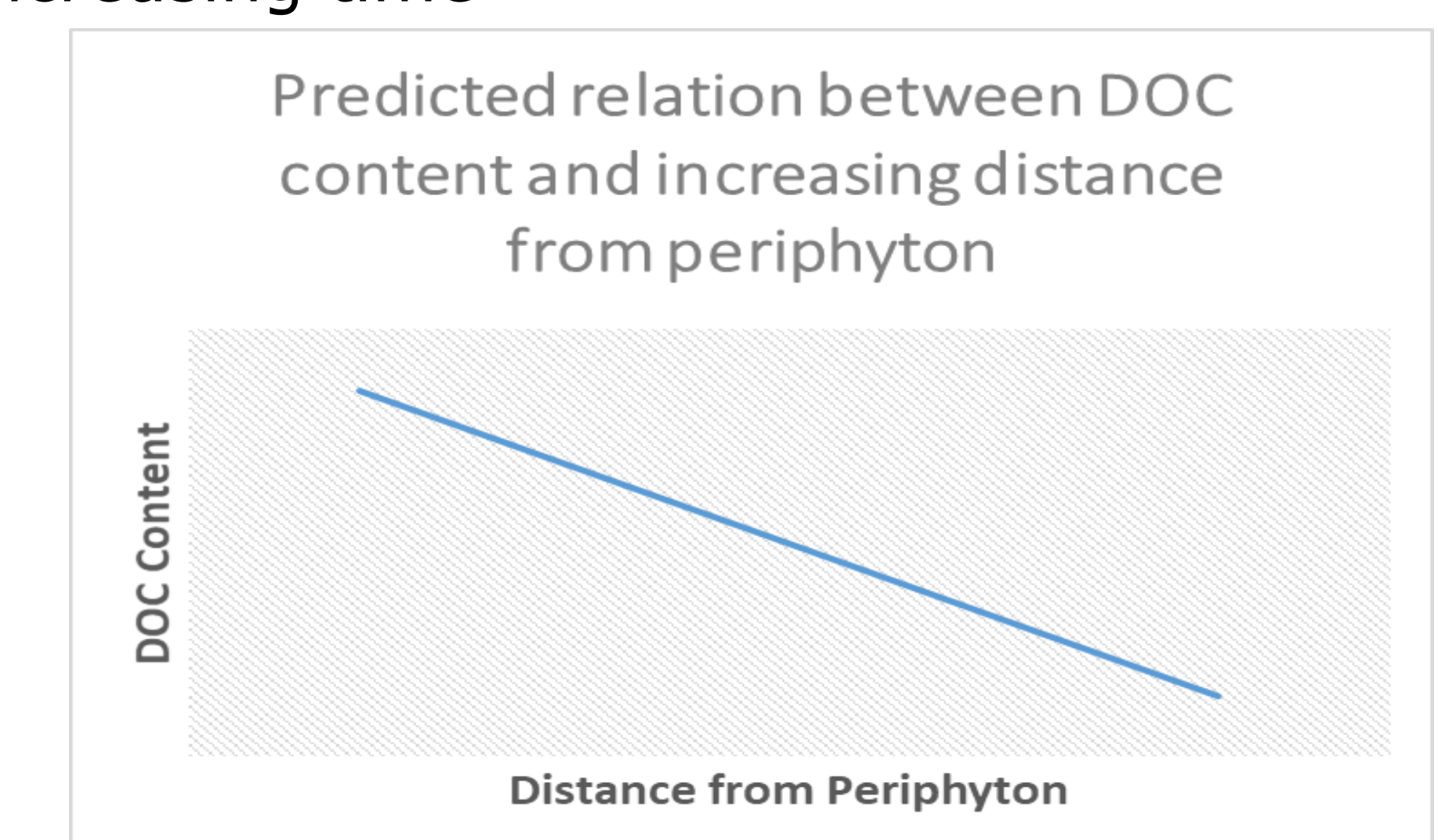


Figure 5. Relation between DOC content and increasing distance from periphyton

