

## **Environmental Impact of Cyanobacteria in geological time perspective**

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Recent rise of scientific interest for cyanobacteria as a group was fostered by the introduction of microbial phylogenetics based of DNA sequencing, which brought new insights to prokaryote diversity. While the number of now recognized prokaryotic phyla has surpassed 80 and is still growing, the analyses of 16Sr RNA gene sequences have singled out Cyanobacteria as the unique phylum of Bacteria that harbors the monophyletic origin of the oxygentic photosynthesis. It confirmed the transfer of that faculty via endosymbiosis to all phototrophic eukaryotes, often in multiple steps. These conclusions are in agreement with the record of chemical and body fossils of ancient cyanobacteria reaching back more than 2.500 My. This means that cyanobacteria are historically responsible for providing the planet with an oxygenated atmosphere by means of the same metabolic invention that today continues generating the bulk of the planetary primary production of organic matter. Today, cyanobacteria contribute to primary production of oligotrophic regions of the world ocean, supply nutrients to the biota by fixing atmospheric nitrogen, but also form blooms in response to eutrophication and environmental deterioration. Cyanobacteria participate in processes of biosedimentation and bioerosion which are significant over geological time.