

Diatom algae as bioindicators of the water quality in the high mountain Pamir lakes

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Numbers of lakes are placed in Pamir, one of the high altitude areas in Eurasia as Hindu Kush, Altay, and Himalayas. The water in six lakes located at an altitude from 3,729 to 4,213 m above the sea level have different salt content and related to three different groups as Hydrocarbonate, Sulfate, and Sodium, the most varied property is water TDS (Kemmerich, 1978). TDS in Bulunkul, Yashilkul, Turumtaykul, and Rangkul is about 300 mg/L, two other lakes have very high level of TDS as 10,867 mg/L in Karakul and 141,000 mg/L in Sassykkul (Barinova, Niyatbekov, 2019). Whereas six lakes are located in the territory of the Tajik National Park, Tang and Khorog reservoirs were studied in comparison. Both reservoirs are low saline but received industrial wastewater polluted by Th 0.073 and 0.054 mg/L, and U 3.65 and 3.88 mg/L respectively (Abdushukurov et al., 2017). Diatom algae from these six Pamir lakes and two reservoirs were studied in 466 samples collected in 2000-2018. Altogether 300 species of diatom algae (330 with infraspecies) of 76 genera (Niyatbekov, Barinova, 2018) were revealed as bioindicators of water quality. The richest communities were found in freshwater lake Turumtaykul with 184 taxa, and lowest in polluted Khorog reservoir with 86 taxa. Bioindicator analysis with help of statistical methods shows that the water of lakes and reservoirs is low alkaline, middle organic polluted, Class 2-3 with Index saprobity S 1.34-1.46, and oligo- to mesotrophic, settled by periphytic autotrophs community with salinity as regulating factor of diatom diversity.

Periphytic autotrophs:

An autotroph or essential maker is a life form that produces complex natural mixes, (for example,

starches, fats, and proteins) utilizing carbon from basic substances, for example, carbon dioxide,[1] for the most part utilizing vitality from light (photosynthesis) or inorganic concoction responses (chemosynthesis). Autotrophs needn't bother with a living wellspring of carbon or vitality and are the makers in an evolved way of life, for example, plants ashore or green growth in water (as opposed to heterotrophs as shoppers of autotrophs or different heterotrophs). Autotrophs can decrease carbon dioxide to make natural mixes for biosynthesis and as put away synthetic fuel. Most autotrophs use water as the lessening specialist, however some can utilize other hydrogen mixes, for example, hydrogen sulfide.

Diatom algae:

Diatoms (diá-tom-os 'cut down the middle', from diá, 'through' or 'separated'; and the base of tém-n-ō, 'I cut'.) are a significant gathering of green growth, explicitly microalgae, found in the seas, conduits and soils of the world. Living diatoms make up a critical bit of the Earth's biomass: they create around 20 to 50 percent of the oxygen delivered on the planet every year, take in over 6.7 billion metric huge amounts of silicon every year from the waters wherein they live, and contribute almost 50% of the natural material found in the seas. The shells of dead diatoms can reach as much as a half-mile (800 m) profound on the sea depths, and the whole Amazon bowl is treated every year by 27 million tons of diatom shell dust moved by transoceanic breezes from the African Sahara, a lot of it from the Bodélé Depression, which was once comprised of an arrangement of new water lakes.