

The deteriorating nutrient status of the Berg River, South Africa

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Abstract

The upper catchment area of the Berg River in the Western Cape, South Africa, supplies most of Cape Town and its suburbs with freshwater, in addition to providing water for irrigation purposes along the middle and lower reaches of the river. This study investigates the nutrient status of the Berg River and long-term trends therein. It is shown that inorganic nitrogen and phosphorus levels increase downstream by a factor of more than 10, in response to anthropogenic inputs. Similarly, nutrient levels fluctuate seasonally by more than an order of magnitude, in response to input from diffuse and point sources of pollution. These changes of more than 1 000% far exceed the 15% maximum change stipulated by the South African water quality guidelines for aquatic ecosystems. Total phosphorus levels indicate that hypertrophic conditions prevail at least episodically at all of the Berg River monitoring stations and most of the time at some of them. Additionally, river water phosphate levels show a dramatic increase over the past 20 years. There is also strong evidence that the trophic status of the Berg River is very sensitive to reduced river runoff. The implication is that the construction of the new Berg River Dam in the upper catchment area of the Berg River will exacerbate the existing situation, threatening ecosystem services, human health and lucrative agricultural activities.

Keywords: Berg River, eutrophication, nutrients, nitrate, phosphate