

Analysis of Concentration of Nutrients in Gaboška Vučica Surface Waters

Analiza koncentracije hranjivih tvari u površinskim vodama Gaboške Vučice

Introduction

Gaboška Vučica is a 16.118 km long tributary of Vuka River (Municipality of Markušica, Vukovar-Srijem County) (Fig. 1). The part of the Vuka River between border with Osijek-Baranja County and its confluence into the Danube River (in Vukovar) has two tributaries – Bobota Canal, which merges with Vuka River in Vukovar, and Gaboška Vučica, which collects water from Nuštarska Greda and Krndija mountain [1].

Gaboška Vučica is a collector of wastewater from municipality of Markušica (an area with intensive agricultural production) [2] and since wastewaters are usually loaded with nutrients the aim of this study was to collect and analyse concentration of nitrogen and phosphorus compounds (whose concentration in water must comply with the permissible limit value in order to avoid nutrient overload of environment and eutrophication) in surface water of Gaboška Vučica River (Fig. 1).

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Results

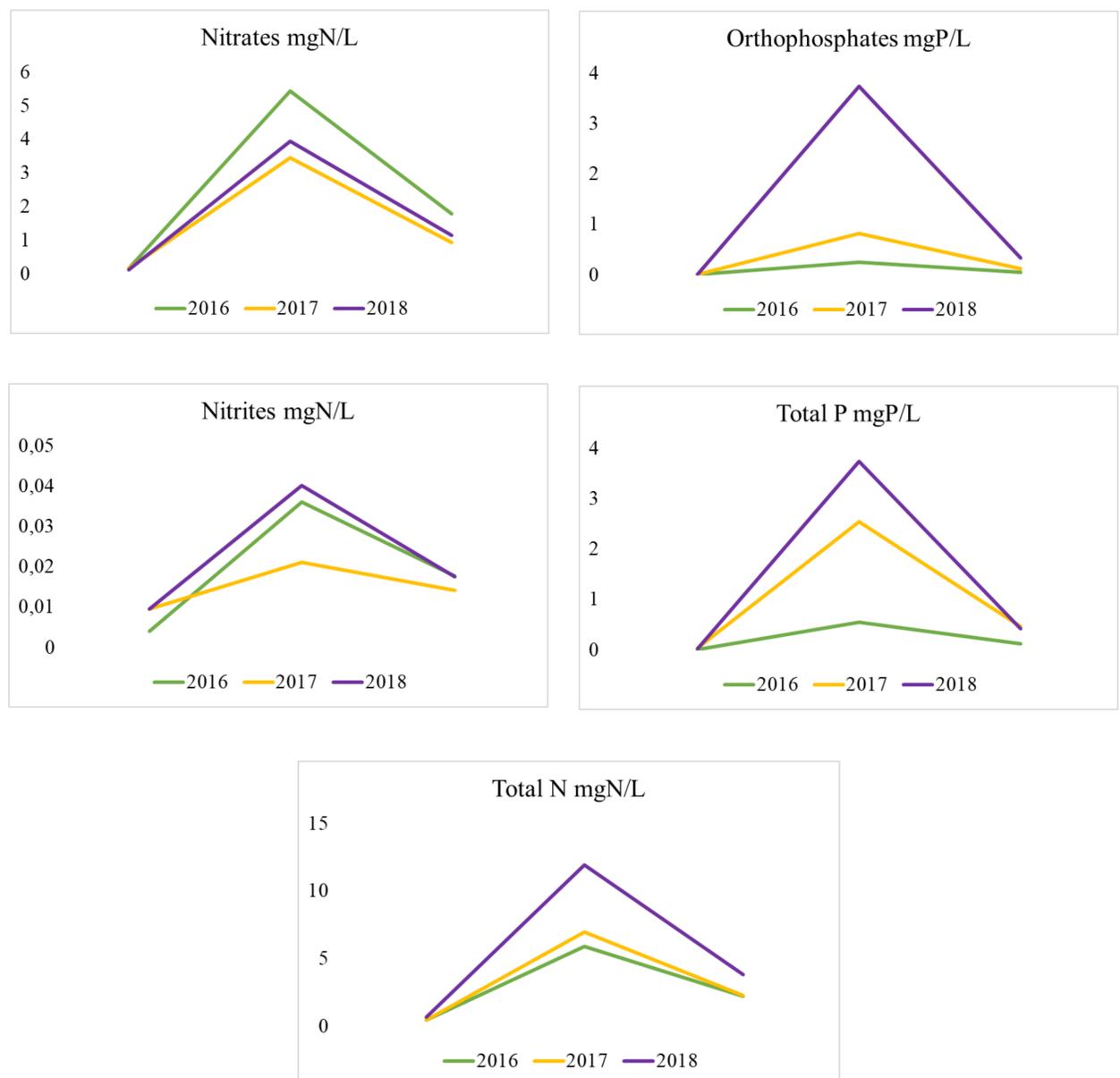


Figure 2. Concentration of nitrites, nitrates, total nitrogen, orthophosphates and total phosphorus (expressed in mg/l) in Gaboška Vučica River surface water.

Conclusions

Obtained results show that during analysed period concentration of total nitrogen was in the range of 0.43–11.9 mg/L, concentration of nitrites was 0.009–0.036 mg/L, and concentration of nitrates was 0.0113–5.42 mg/L, what is higher than in the previously analysed period (2014 and 2015).

Concentration of orthophosphates was in the range of 0.005–3.733 mg/L and total phosphorus was in the range of 0.004–0.625 mg/L, what is also higher than in the previously analysed period. The highest concentration of nitrogen and nitrogen compounds were measured in 2016 (nitrates) and 2018, in the case of phosphorus and orthophosphorus the highest concentration was observed in 2018..

According to current regulations in Croatia, surface water quality of Gaboška Vučica with regard to chemical parameters can be characterized as moderate. Further continuous monitoring of water quality is necessary in order to improve reliability of water quality categorization, for which purpose specific polluting particulate matter should also be taken into consideration.

Methods

Samples were taken once a month over the period of two years (2016 and 2018, Hrvatske vode) at one location (Ostrovo, 21311). Analyzed chemical parameters of water quality were concentration of nitrates and nitrites, total nitrogen, concentration of orthophosphates and total phosphorus (Fig. 2).

This is a part of Croatia with highly developed food industry, such as agricultural production, livestock farming, *et cetera*.

References

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- [5] Regulation on water quality, in Croatian. *Narodne novine* 2013/73.

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