

Combined effects of urbanization and longitudinal disruptions in riparian and in-stream habitat on water quality of a prairie stream



Local habitat and riparian modifications imposed by surrounding land use drastically impact the water quality of streams. However, whether these effects could still be discernible when the watercourse also receives urbanization effluents has not been fully explored. We evaluated the water quality of a Neotropical prairie stream exposed to urbanization and explored the role of downstream patches of different surrounding land uses (cropland and livestock) in further regulating water quality. Forty-two variables of water quality, habitat structure and riparian condition were measured at four reaches of the Languetú stream. Significant differences in water quality were observed. Water conductivity, dissolved oxygen, salinity, dissolved solids, chloride, inorganic nitrogen and bacteriological loads displayed a continuum of recovery from the urban reach. Indeed, almost 24 percent of the total variation in water quality was explained by the longitudinal arrangement of sites. Alternatively, pH, phosphorous, suspended solids and chemical oxygen demand showed a disruption in this continuum of recovery and were highly related with local aspects

of habitat structure and riparian conditions imposed by cropland and livestock. Key aspects of effluent treatment, riparian integrity and in-stream habitat must be addressed within a comprehensive social context in order to design sustainable management of fluvial urbanised ecosystems.

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