

Batelaan, O., Rimaviciute, E., De Smedt, F., Teissier, S., Peretyatko, A., Triest, L., Integrated water management of the river-pond system of the Woluwe urban catchment: groundwater discharge simulation and ecological indicators. Conference abstract, 7th INTECOL International Wetlands conference, 25-30 July, Utrecht, p. 26.

INTEGRATED WATER MANAGEMENT OF THE RIVER-POND SYSTEM OF THE WOLUWE URBAN CATCHMENT: GROUNDWATER DISCHARGE SIMULATION AND ECOLOGICAL INDICATORS

[O. Batelaan]¹, [E. Rimaviciute]¹, [F. De Snedt]¹, [S. Teissier]²,
[A. Peretyatko]², [L. Triest]²

¹ [Department of Hydrology and Hydraulic Engineering, Vrije Universiteit Brussel, Pleinlaan 2, 1050 Brussel] (batelaan@vub.ac.be)

² [Plant Science and Nature Management, Vrije Universiteit Brussel, Pleinlaan 2, 1050 Brussel] (ltriest@vub.ac.be)

The objective of this study is to assess the ecohydrological relations in the anthropogenic catchment of the Woluwe River, Brussels, by the means of analysing the hydrological and ecological status of the area.

The spatial recharge distribution is simulated with WetSpass, while MODFLOW was used to simulate the groundwater head and discharge areas. Different discharge areas have been delineated such that they represent similar topographical, hydrological and ecological conditions. They are linked, by using MODPATH, to the appropriate recharge areas.

Most of the simulated discharge areas appear as narrow bands along the river courses and in many cases coincide with ponds. The total discharge area constitutes 1.5 % of the total catchment size with an average discharge of 42.6 mm/day, flow times vary from 17 days to 423 years with an average of 32 years. It has been observed that the further from a discharge area, the more variable flow time becomes. For the recharge-discharge systems identified, the flow time has a tendency to increase with an increasing size of the region. The closer is the region to the river mouth the higher is the flow time.

69% of the mapped phreatophyte locations lie within the simulated discharge areas. Most of the discrepancies are probably due to scale limitations of the simulations and uncertainty in the phreatophyte mapping. The physico-chemical and phytoplankton analyses of the ponds show a wide spectrum of qualities and trophic status.