

Jan Vymazal
Editor

Wastewater Treatment, Plant Dynamics and Management in Constructed and Natural Wetlands



Springer

Contents

Preface	v
In Memoriam for Olga Urbanc-Berčič	vii
Contributors	xv
1 Reed Stand Conditions at Selected Wetlands in Slovenia and Hungary	1
Mária Dinka, Edit Ágoston-Szabó, Olga Urbanc-Berčič, Mateja Germ, Nina Šraj-Kržič, and Alenka Gaberščik	
2 Water Quality and Macrophyte Community Changes in the Komarnik Accumulation Lake (Slovenia)	13
Brigita Horvat, Olga Urbanc Berčič, and Alenka Gaberščik	
3 Latitudinal Trends in Organic Carbon Accumulation in Temperate Freshwater Peatlands	23
Christopher Craft, Chad Washburn, and Amanda Parker	
4 Buffering Performance in a Papyrus-Dominated Wetland System of the Kenyan Portion of the Lake Victoria Basin	33
Herbert John Bavor and Michael Thomas Waters	
5 Changes in Concentrations of Dissolved Solids in Precipitation and Discharged Water from Drained Pasture, Natural Wetland and Spruce Forest During 1999–2006 in Šumava Mountains, Czech Republic	39
Jan Procházka, Jakub Brom, Libor Pechar, Jana Štířchová, and Jan Pokorný	
6 Dynamics of Litterfall and Decomposition in Peatland Forests: Towards Reliable Carbon Balance Estimation?	53
Raija Laiho, Kari Minkkinen, Jani Anttila, Petra Vávřová, and Timo Penttilä	

7	Near Infrared Reflectance Spectroscopy for Characterization of Plant Litter Quality: Towards a Simpler Way of Predicting Carbon Turnover in Peatlands?	65
	Petra Vávřová, Bo Stenberg, Marjut Karsisto, Veikko Kitunen, Tarja Tapanila, and Raija Laiho	
8	Leachate Treatment in Newly Built Peat Filters: A Pilot-Scale Study	89
	Pille Kängsepp, Margit Kõiv, Mait Kriipsalu, and Ülo Mander	
9	Monthly Evapotranspiration Coefficients of Large Reed Bed Habitats in the United Kingdom	99
	Katy E. Read, Peter D. Hedges, and Phil M. Fermor	
10	The Hydrological Sustainability of Constructed Wetlands for Wastewater Treatment	111
	Peter D. Hedges, Phil M. Fermor, and Jiří Dušek	
11	Factors Affecting Metal Accumulation, Mobility and Availability in Intertidal Wetlands of the Scheldt Estuary (Belgium)	121
	Gijs Du Laing, Annelies Van de Moortel, Els Lesage, Filip M.G. Tack, and Marc G. Verloo	
12	Reed Bed Sewage Treatment and Community Development/Participation	135
	Sean O'Hogain	
13	The Constructed Wetland Association's Database of Constructed Wetland Systems in the UK	149
	Paul Cooper	
14	Nitrogen Removal by a Combined Subsurface Vertical Down-Flow and Up-Flow Constructed Wetland System	161
	Suwasa Kantawanichkul, Kiattisak Pingkul, and Hiroyuki Araki	
15	Statistical Analysis of Treatment Performance in Aerated and Nonaerated Subsurface Flow Constructed Wetlands	171
	Scott Wallace, Jaime Nivala, and Troy Meyers	
16	Constructed Wetland Břehov: Three Years of Monitoring	181
	Lenka Kröpfelová	

17	Factors Affecting the Longevity of Subsurface Horizontal flow Systems Operating as Tertiary Treatment for Sewage Effluent	191
	David Cooper, Paul Griffin, and Paul Cooper	
18	Investigations on Nitrogen Removal in a Two-Stage Subsurface Vertical Flow Constructed Wetland	199
	Günter Langergraber, Christoph Prandtstetten, Alexander Pressl, Kirsten Sleytr, Klaus Lerach, Roland Rohrhofer, and Raimund Haberl	
19	Removal of Heavy Metals from Industrial Effluents by the Submerged Aquatic Plant <i>Myriophyllum spicatum</i> L.	211
	Els Lesage, Charity Mundia, Diederik P.L. Rousseau, Anelies M.K. van de Moortel, Gijs du Laing, Filip M.G. Tack, Niels De Pauw, and Marc G. Verloo	
20	Cold Season Nitrogen Removal in a High Loaded Free Water Surface Wetland with Emergent Vegetation	223
	Christer Svedin, Sofia Kallner Bastviken, and Karin S. Tonderski	
21	The Role of Vegetation in Phosphorus Removal by Cold Climate Constructed Wetland: The Effects of Aeration and Growing Season	237
	Aleksandra Drizo, Eric Seitz, Eamon Twohig, David Weber, Simon Bird, and Donald Ross	
22	Performance of Reed Beds Supplied with Municipal Landfill Leachate	251
	Ewa Wojciechowska and Hanna Obarska-Pempkowiak	
23	Enhanced Denitrification by a Hybrid HF-FWS Constructed Wetland in a Large-Scale Wastewater Treatment Plant	267
	Fabio Masi	
24	Growth Dynamics of <i>Pistia stratiotes</i> in Temperate Climate	277
	Silvana Perdomo, Masanori Fujita, Michihiko Ike, and Masafumi Tateda	
25	Fractionation, Biodegradability and Particle-Size Distribution of Organic Matter in Horizontal Subsurface-Flow Constructed Wetlands	289
	Jaume Puigagut, Aracelly Caselles-Osorio, Nuria Vaello, and Joan García	

26	Wastewater-fed Aquaculture, Otelfingen, Switzerland: Influence of System Design and Operation Parameters on the Efficiency of Nutrient Incorporation into Plant Biomass.	299
	Andreas Graber and Ranka Junge-Berberović	
27	Is Concentration of Dissolved Oxygen a Good Indicator of Processes in Filtration Beds of Horizontal-Flow Constructed Wetlands?	311
	Jan Vymazal and Lenka Kröpfelová	
28	Pollutant Transformation Performance and Model Development in African Wetland Systems: Large Catchment Extrapolation	319
	Herbert John Bavor and Michael Thomas Waters	
29	Sulfur Cycling in Constructed Wetlands	329
	Paul J. Sturman, Otto R. Stein, Jan Vymazal, and Lenka Kröpfelová	
	Index	345