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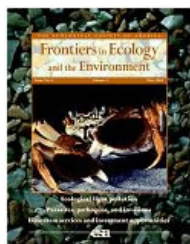
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Reviews

Designed ecosystem services: application of ecological principles in wastewater treatment engineering

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Wastewater treatment engineering and ecology have complementary goals and need to interact much more closely. Wastewater engineers and ecologists share strong interests in the structure and function of biological communities, yet rarely engage in extensive interdisciplinary dialogue. Wastewater (bioprocess) engineers focus on solving practical environmental problems and typically do not work forward from ecological principles to test specific theories. Ecologists, on the other hand, have focused primarily on the collection and analysis of data in order to test specific scientific hypotheses; only recently have they emphasized ecological applications as well. Wastewater engineers should use the fundamentals of ecological theory to help guide future system design and ecologists should view engineered biosystems as valuable new platforms for ecological research.

Cited by

Léa Cabrol, Luc Malhautier, Franck Poly, Xavier Le Roux, Anne-Sophie Lepeuple, Jean-Louis Fanlo. (2012) Resistance and resilience of removal efficiency and bacterial community structure of gas biofilters exposed to repeated shock loads. *Bioresource Technology*
Online publication date: 1-Jul-2012.

[CrossRef](#)

C. Merlo, A. Abril, M.V. Amé, G.A. Argüello, H.A. Carreras, M.S. Chiappero, A.C. Hued, E. Wannaz, L.N. Galanti, M.V. Monferrán, C.M. González, V.M. Solís. (2011) Integral assessment of pollution in the Suquia River (Córdoba, Argentina) as a contribution to lotic ecosystem restoration programs. *Science of The Total Environment*
Online publication date: 1-Sep-2011.

[CrossRef](#)

George F. Wells, Hee-Deung Park, Brad Eggleston, Christopher A. Francis, Craig S. Criddle. (2011) Fine-scale bacterial community dynamics and the taxa–time relationship within a full-scale activated sludge bioreactor. *Water Research*
Online publication date: 1-Aug-2011.

[CrossRef](#)

George F. Wells, Hee-Deung Park, Brad Eggleston, Christopher A. Francis, Craig S. Criddle. (2011) Fine-scale bacterial community dynamics and the taxa–time relationship within a full-scale activated sludge bioreactor. *Water Research*

[CrossRef](#)

Pascal E. Saikaly, Daniel B. Oerther. (2010) Diversity of Dominant Bacterial Taxa in Activated Sludge Promotes Functional Resistance following Toxic Shock Loading. *Microbial Ecology*
Online publication date: 14-Dec-2010.

[CrossRef](#)

K MCMAHON, H MARTIN, P HUGENHOLTZ. (2007) Integrating ecology into biotechnology. *Current Opinion in Biotechnology* 18:3, 287-292

Online publication date: 1-Jun-2007.

[CrossRef](#)

Christopher J. van der Gast, Bruce Jefferson, Elizabeth Reid, Tim Robinson, Mark J. Bailey, Simon J. Judd, Ian P. Thompson. (2006) Bacterial diversity is determined by volume in membrane bioreactors. *Environmental Microbiology* 8:6, 1048-1055
Online publication date: 1-Jun-2006.

[CrossRef](#)

Claire Kremen. (2005) Managing ecosystem services: what do we need to know about their ecology?. *Ecology Letters* 8:5, 468-479
Online publication date: 1-May-2005.

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