



## Evaluation of the biodegradability of petroleum in microcosm systems by using mangrove sediments from Camamu Bay, Bahia, Brazil

A.C.F. Santos, R.P. Rezende, M. Brendel, S.S. Souza, A.C.S. Gonçalves and J.C.T. Dias

Departamento de Ciências Biológicas, Universidade Estadual de Santa Cruz, Salobrinho, Ilhéus, BA, Brasil

Corresponding author: R.P. Rezende  
E-mail: rezende.rachel@gmail.com

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**ABSTRACT.** We investigated the biodegradability of oil in mangrove sediment from Camamu Bay and measured its effect on the bacterial community. Microcosms of mangrove sediment were contaminated with 0.1, 0.5, 1, 2, and 5% (w/v) oil, and the microbial activity was compared to that in uncontaminated sediment. The evolution of CO<sub>2</sub> and gas chromatography showed the mineralization of oil compounds, which could reach 100%. Bacterial diversity was determined by polymerase chain reaction using a set of primers for the V3 and V6-V8 regions of 16S rDNA. The band profile obtained by denaturing gradient gel electrophoresis of the amplicons that were obtained for the V3 region showed a negative correlation between band number and oil concentration, whereas that of the V6-V8 region showed a positive correlation between band numbers and oil concentration. The latter also gave similar results for microcosms that were contaminated with 2 and 5% oil. These results demonstrate the mangrove sediment's capacity to recover from oil contamination (*in*

*vitro*) and suggest that native mangrove microorganisms contain enzymes necessary for the catabolism of oil.

**Key words:** CO<sub>2</sub>; Denaturing gradient gel electrophoresis; 16S rDNA; V3 region; V6-V8 region