

Effects of temperature and fertilisation on total vs, active bacterial communities exposed to crude and diesel oil pollution in the NW Mediterranean Sea.

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The dynamics of total and active microbial communities were studied in seawater microcosms amended with crude or diesel oil at different temperatures (25, 10 and 4 °C) in the presence/absence of organic fertilization (Inipol EAP 22). Total and hydrocarbon-degrading microbes were enumerated by fluorescence microscopy and Most Probable Number (MPN) method, respectively. Total (16S rDNA-based) vs. active (16S rRNA) bacterial community structure was monitored by Capillary-Electrophoresis Single Strand Conformation Polymorphism (CE-SSCP) fingerprinting. Hydrocarbons were analyzed after 12 weeks of incubation by gas chromatography–mass spectrometry. Total and hydrocarbon-degrading microbial counts were highly influenced by fertilization while no important differences were observed between temperatures. Higher biodegradation levels were observed in fertilized microcosms. Temperature and fertilization induced changes in structure of total bacterial communities. However, fertilization showed a more important effect on active bacterial structure. The calculation of Simpson's diversity index showed similar trends among temperatures whereas fertilization reduced diversity index of both total and active bacterial communities.