



## **Live-dead agreement of benthic communities under pressure by chronic oil pollution in the Arabian Sea**

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Mismatch between the richness or species composition of a death assemblage (DA) and the local living assemblage (LA) is typically attributed to natural post-mortem processes, particularly preservational bias. Recent research, however, suggests that live-dead (LD) agreement is significantly lower in anthropogenically disturbed settings. This reflects the so-called “compositional inertia” of DAs to recent environmental change, i.e. DAs still capture earlier community states not affected by such disturbance. The inertia to changing ecological conditions should be particularly likely under conditions of anthropogenic modification because the rapidity of many human-driven changes is unprecedented in natural systems. Our research tests this hypothesis by evaluating the agreement between the LA and DA in benthic communities around the Zakum oil field in the Southern Arabian Sea, off the coast of the United Arab Emirates. This is an area of intense oil extraction, with almost 800 offshore oil and gas platforms and 25 major terminals, but no studies on the related impacts are widely available. This approach also sheds light on chronic pollution in tropical settings, an underrepresented topic in the literature. The size fraction between 2 and 5 mm was sorted for living molluscs and empty shells, which were then segregated to morphospecies and identified. The agreement was evaluated in terms of fidelity of species richness, evenness, and rank-order agreement. Compositional fidelity was also evaluated by multivariate analysis. The communities are dominated by bivalves. Polyplacophorans and scaphopods are occasionally present. Gastropod abundance is marginal compared to the bivalves, although their contribution is more significant when species diversity is taken into consideration. Moreover, the living assemblage in the studied size range was particularly poor in terms of species abundance.