



## **Live (Rose Bengal stained) foraminiferal faunas from the northern Arabian Sea: faunal succession within and below the OMZ**

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Live (Rose Bengal stained) benthic foraminifera from the Murray Ridge, within and below the northern Arabian Sea Oxygen Minimum Zone (OMZ), were studied in order to determine the relationship between faunal composition, bottom-water oxygenation (BWO), pore-water chemistry and organic matter (organic carbon and phytopigment) distribution. A series of multicores were recovered from a ten-station oxygen (BWO:  $2\mu\text{M}$  -  $78\mu\text{M}$ ) and bathymetric (885 - 3010m depth) transect during the winter monsoon in January 2009. Foraminifera were investigated from three different size fractions ( $63\text{-}125\mu\text{m}$ ,  $125\text{-}150\mu\text{m}$  and  $>150\mu\text{m}$ ). The larger foraminifera ( $>125\mu\text{m}$ ) were strongly dominated by agglutinated species (e.g. *Reophax* spp.). In contrast, in the  $63\text{-}125\mu\text{m}$  fraction, calcareous taxa were more abundant, especially in the core of the OMZ. On the basis of a Principal Components Analysis, three foraminiferal groups were identified and correlated to the environmental parameters by Canonical Correspondence Analysis. The faunas from the shallowest stations, in the core of the OMZ (BWO:  $2\mu\text{M}$ ), were composed of "low oxygen" species, typical of the Arabian Sea OMZ (e.g., *Rotaliatinopsis semiinvoluta*, *Praeglobobulimina* sp., *Bulimina exilis*, *Uvigerina peregrina* type parva). These taxa are adapted to the very low BWO conditions and to high phytodetritus supplies. The transitional group, typical for the lower part of the OMZ (BWO:  $5\text{-}16\mu\text{M}$ ), is composed of species, which are tolerant as well to low-oxygen concentrations, but may be less critical with respect to organic supplies (e.g. *Globocassidulina subglobosa*, *Ehrenbergina trigona*). Below the OMZ (BWO:  $26\text{-}78\mu\text{M}$ ), where food availability is more limited and becomes increasingly restricted to surficial sediments, cosmopolitan calcareous taxa were present, such as *Bulimina aculeata*, *Melonis barleeanus*, *Uvigerina peregrina* and *Epistominella exigua*. Miliolids were uniquely observed in this last zone, reflecting the higher BWO and/or lower organic input.