

Metazoan Meiofauna: Benthic Assemblages for Sustainable Marine and Estuarine Ecosystems



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Synonyms

[Ecological indicators](#); [Free-living nematodes](#);
[Functional biodiversity](#); [Meiobenthos](#); [SDG 14](#)

Definition

The study of meiofauna is a late component of benthic research, even though meiobenthic animals have been known since the early days of microscopy. Animals which live in the water filling the spaces of capillary sands have been known to exist since the 1800s (Higgins and Thiel 1988). The terms meiobenthos or meiofauna are largely used in many references as synonyms, with meiobenthos having been considered as interstitial fauna of the meiofauna living in sediments. The term “meiobenthos” was introduced and defined in 1942 by Mare, in her account of the benthos of muddy substrates of Plymouth (England), to describe benthic metazoans of

intermediate size (Mare 1942). Nowadays, members of the meiofauna are considered mobile and sometimes also haptosessile benthic animals smaller than those traditionally called macrobenthos but larger than the microbenthos (bacteria, diatoms, and most protozoa) (Giere 2019).

The meiofauna or meiobenthos was defined on a methodological basis as all metazoans retained on a sieve of 38µm (Vincx et al. 1990), 63µm (Austen and Warwick 1989), 32µm (Vanreusel et al. 1997; Leduc et al. 2010) or 31µm (Giere 2019). Currently, the size boundaries of meiobenthos are based on the standardized mesh width of sieves with 500µm or 1000µm, the meiofauna being all the fauna passing the coarse sieve and retained by the finer sieve during sieving. A lower size limit of 32µm or 20µm has been used on deep-sea meiofauna to quantitatively retain even the smallest organisms (Danovaro et al. 2002). However, meiofauna definition based on the sieve sizes raise some problems because macrofauna juvenile forms are doubtful included among meiofauna and are excluded in the adult forms. In the past, some authors acknowledged this problem and distinguished between temporary and permanent meiofauna (McIntyre 1969). Nowadays, meiofauna is defined as having independent evolutionary history and represents a separate group of animals from the biological and ecological perspective, with a coherent life history and feeding characteristics, which sets them apart as a separate