**Evolving Paradigms: The History of Meiofaunal Research**

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The history of meiofaunal research has been documented in considerable detail by Olav Giere in his book "Meiobenthology" (particularly the second edition which has a more substantial coverage of freshwater meiofauna). Most of the participants at this conference will own this book or at least have access to it and, rather than attempting to summarise it, my presentation will present a quite personal viewpoint that I hope will be provocative and provide some food for thought.

Over the years, meiofaunal research activity has been punctuated by technological inventions that have sharpened our understanding; from the mid-1600s with Antonie van Leeuwenhoek's peculiar microscopes to PCR machines developed in the late 1900s. Early research was motivated by the wonder of discovering this new world of microscopic animals, involving faunistics, taxonomy, and describing the particular biological characteristics associated with their small body size (particularly their conservative reproductive adaptations and highly selective feeding behaviour). Subsequently attention turned to descriptive ecology of an academic nature; where do they live, how many are there, how are they influenced by abiotic factors? Increasing awareness of environmental issues then motivated more functional approaches; studies of trophic interactions, production and energy flow, life history, role in benthic ecosystems and impacts of pollution, often involving controlled experiments and manipulations. Most recently, concerns for conservation have demanded the ability to predict the effects of global climate change on species and molecular biodiversity and the broader consequences of such changes, which present meiofaunal researchers with perhaps their greatest challenge. Processes operating over both ecological and evolutionary timescales may be involved, and whilst we can conduct experiments simulating the effects of short term ecological events such as pollution or disturbance, climate changes involving increasing temperature, sea-level rise and ocean acidity are occurring over the much longer term. Since meiofaunal animals have generation times in the order of months, natural selection may compensate for any possible deleterious effects over these evolutionary timescales which, together with the possibility of species replacements, may render the results of short term manipulative experiments meaningless in this context.

It is acknowledged that studies of the ecology of freshwater meiofauna have taken longer to emerge as an independent discipline than those of its marine counterpart, and the early literature on this freshwater fauna used terms relating to habitat rather than size. Perhaps this is partly because the term meiofauna originated early in the marine literature that lacked the cognizance of the freshwater community. However, it is undoubtedly also due to the fact that in the sea, despite recent claims to the contrary, animals in the meiofaunal and macrofaunal size ranges comprise recognisably separate ecological and evolutionary units with bimodal size spectra, whereas the freshwater size spectrum is more continuous and the division between the two categories is more arbitrary.

The relatively recent scientific and social history of meiofaunal research has been charted in our newsletter Psammonalia, started in 1966 as a 2-page Bulletin "to maintain communication among American psammologists", subsequently becoming the Newsletter of

the Association of Meiobenthologists in 1968, with this Association becoming International in 1974. In its heyday from the early 1970s to late 1990s four issues of Psammonalia were published annually, each year averaging around 50 pages and 400 literature citations. Since that period there has been a gradual decline in all these measures. Does this indicate a decline in meiofaunal research activity? Probably not, because internet searches reveal a linear increase in meiofaunal publications from 1970 until now. What we seem to be losing is, to quote the last sentence in Olav's book, "our easy-going way of exchanging news and ideas". We are faced with a stark choice; either we view meiofauna as something special, remain as an effective Association and bring Psammonalia back to its former glory by actively contributing news and ideas, or we accept the views of some that we are becoming too isolationist, integrate with more general ecological research, and abandon the Association altogether.