

Editorial

Monitoring is apparently a useful exercise designed, after several years of abusing nature, to ascertain the consequences of the human impact on the marine environment and – in the case of time series – to learn about possible trends in its future development. Using chemical and biological monitoring we can learn how these things are connected in terms of bioaccumulation or biomagnification. Biological effects monitoring (BEM) is supposed to provide us with information on how the aquatic ecosystem responds to external impacts. BEM methods include bioassays, biomarkers, and community and population responses. While the bioassay tests function as broad screening tools, biomarker tests refer to biological responses as information on the degree of exposure to a chemical at the sub-organismic level. Population and community responses can be used to provide information on the health of the marine environment, combining a range of impacts. General BEM should work as an 'early warning system' as well as an indicator of long-term changes brought about at the ecosystem level (Stagg 1998). In the sense of how we want to make use of general BEM results, we are mostly interested in the human impact.

But isn't BEM "carrying coals to Newcastle" or merely stating the obvious? Many of us who are over 50 years old will recall what the marine environment was like before pollution struck beaches and rocky shores. It may well be argued that the signals transmitted by BEM are no more efficient than what can be obtained by merely recalling what it was like in the early 1950s, when industrialization and pollution therefrom were still in their infancy (and, consequently, their impact on nature was not yet visible to the untrained eye). We remember ourselves, having snorkelled over vast areas of sea grass beds and rich growths of brown and calcareous algae, teeming with fish and invertebrate life, just off the major tourist spots in the Mediterranean. Today, should we go on a 50th anniversary tour of these same sites, we will

find a largely barren sandy bottom, littered with bottles, aluminium soft drinks cans and polythene bags drifting to and fro in the surf. So, we may rightly ask ourselves: "Do we really need monitoring, let alone BEM, to see these 'blessings of civilisation'?", when all we do is, in fact, confirm what any open-eyed wanderer with an intact memory must realize just the same. Thus, BEM must provide us with something more than simply stating the obvious. As we understand it, it is meant to provide a tool for environmental impact assessment and environmental management at the same time. In order to qualify for this task, BEM should possess a distinctive quality in the sense that it must aptly quantify observed changes and, even more importantly, detect subtle changes that are far beyond just 'stating the obvious'.

The contributions in this volume are the results of 3 years of multidisciplinary research which attempted to do just that: to develop means and methods which will enable us to distinguish between sites that, to the untrained observer, may appear strikingly similar in their ecological state, but are actually very different as far as human impact assessment is concerned – and if at all possible, do this at an early stage that does not manifest itself to the casual observer. We hope that these presentations represent a first step towards the establishment of practical tools in environmental management, tools that will be utilized in years to come by those involved in environmental impact assessment and coastal zone management.

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References

- Stagg RM (1998) The development of an international programme for monitoring the biological effects of contaminants in the OSPAR Convention area. *Mar Environ Res* 46:307–313