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## Editorial

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It is hard to imagine anything more relaxing and tranquil than to sit down on the edge of the seashore and gaze at the ever-changing, glittering reflection of the sunlight in the waves. However, this serenity is deceptive, because out there, beneath the endless blue yonder, a great many destructive forces are at work. Marine coasts are highly complex ecosystems constantly moulded and reshaped by a vast array of active natural processes in a myriad of endless cycles of build up, erosion, birth, life and death. In the last 50 years, we have been witnessing a harsh, relentless human all-round offensive against the seas. This onslaught is constantly taking its toll, and today many coastal areas of the world that once teemed with life are all but barren. By using state of the art fishing technology, we are looking at a rapidly growing list of marine species that have become depleted, approaching commercial extinction. Every year, the world's coastal regions are enduring new anthropogenic stressors. Once, the marine environment was regarded as a "bottomless pit" capable of absorbing endless amounts of sewage, industrial effluents and land runoff: our assault on the oceans was largely ignored for many years. Why? Because much of the pollution damage may not be readily obvious to the naked eye, and it is largely through sophisticated scientific instrumentation that we may fathom how we have "succeeded" in impacting vast regions of the sea, from the shallows to the ocean depths. Often, only occasional catastrophic tanker oil spills that reach the news, or plastic debris and tar balls lining the beach on a weekend outing, are the only reminders that something dreadful is happening to our seas.

Although levels of pollutants in the environment are measured with growing accuracy, the determination and

quantification of the biological effects of pollution is a complex matter. Organisms living in the water often appear unaffected; in some cases, while effects may be visible, they may only be present temporarily. The effects of a contaminant on a given organism are roughly correlated to its incorporation into the living tissue, which in turn is largely dependent on a wide range of environmental factors. Thus, pollutant effects are inconsistent and, to complicate things further, may vary considerably at similar nearby sites for no apparent reason. The interpretation of chemical data with regard to cause/effect relationships is thus extremely tricky, and we need to work constantly on the development and application of new approaches and innovative methods of biomonitoring that will help us to understand how the underlying mechanisms work.

The MARS project was designed to integrate a variety of approaches and develop a set of biological indicators for use in marine pollution monitoring and environmental quality assessment in three geographically separate areas. This volume presents 15 papers that summarise the results of multidisciplinary research by the six German and Israeli groups involved in the MARS 2 project. The results of the first phase of the project, MARS 1, were published in 10 papers included in an earlier issue [Helgoland Marine Research 53 (3 & 4), 1999]. Over the 6 year span of MARS 1 and 2 (1995–2001), many additional papers were published throughout the scientific literature.

We hope that the MARS project studies presented here will be helpful in the global endeavour to develop new tools for enhanced monitoring and management of coastal marine ecosystems.

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